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ABSTRACT

A project was conducted to adapt or develop and field-test an evaluation model for competency-based education, using Florida's Approach to Competency Based Individualized Teaching (FACIT) teacher-training materials for model development and field testing. Because of problems with the production of the FACIT materials, the field test of an evaluation model could not be carried out. Instead, the project sought a model that could be easily adapted to the evaluation of any competency-based program. To meet this revised goal, an in-depth literature review of evaluation models for competency-based programs was undertaken, using a set of criteria that would satisfy the requirements of program description and evaluation. As a result of this review, the Stufflebeam model was identified as one that would provide comprehensive guidelines for planning the evaluation of competency-based programs. This model, however, did not provide sufficient guidance in the description of programs to be evaluated. Therefore, the project developed program-description guidelines that incorporated elements of the Stake evaluation model and the Concerns-Based Adoption Model. (Appendixes to this report provide information about evaluation questions and contain various instruments that can be used in evaluating competency-based programs.) (Author/JH)

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Final Report

Project No. DVE 9-1C12

From 7-1-78 to 6-30-79

Development of An Evaluation Model For Competency-Based Instruction

Florida State University
Tallahassee, Florida 32306

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The project reported herein was conducted pursuant to a grant from the Division of Vocational Education, Florida Department of Education. Contractors undertaking such projects are encouraged to express freely their professional judgments in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent the official position or policy of the Florida Department of Education.

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ABSTRACT

The purpose of this project was to adapt or develop and to field-test an evaluation model for competency-based education, using the FACIT teacher-training materials as the focus for model development and using these materials during the field test of the model. Further efforts were to center on expanding the model to apply to other competency-based programs.

Because of problems with the production of the FACIT materials, the field test of an evaluation model could not be carried out. No attempt was made then to develop a model tailored to the specific needs of Florida schools; instead the project sought a model that could be easily adapted to the evaluation of any competency-based program.

To meet this revised goal, an in-depth literature review of evaluation models for competency-based programs was undertaken, using a set of criteria that would satisfy the requirements of program description and evaluation. The purpose of this review was to determine whether a model for evaluation of competency-based programs existed, one that could be either adopted or modified to meet the established criteria. Since the literature review on evaluation of competency-based programs failed to yield any models that were sufficiently comprehensive, the literature review was expanded to include general evaluation models that were (with some modifications) also applicable to the evaluation of competency-based programs and that met the established criteria.

As a result of this extensive review, the Stufflebeam model was identified as one that would provide comprehensive guidelines for planning the evaluation of competency-based programs. This model, however, did not provide sufficient guidance in the description of programs to be evaluated. Therefore, the project developed program-description guidelines that incorporated elements of the Stake evaluation model and the Concerns-Based Adoption Model.

These guidelines for describing programs to be evaluated recommend a two-phase process. Phase One includes program description for the purpose of planning the evaluation, and Phase Two includes behavioral descriptions for the purpose of making evaluative judgments.

It is recommended in this report (a) that evaluators use these guidelines but develop their own procedures and use instruments to meet the information requirements of any given situation, (b) that FACIT evaluators become thoroughly familiar with FACIT and modify CBAM techniques to meet FACIT-evaluation information requirements, and (c) that evaluators who use these guidelines, which have not yet been field-tested, document their experience and suggest further developments.

Appendices to this report provide the evaluators with detailed information about evaluation questions and with instruments that can be used in evaluating competency-based programs.

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Introduction

The purpose of the project was to adapt or develop an evaluation model that could be used to guide evaluation of the FACIT (an acronym for Florida's Approach to Competency-Based Individualized Teaching) teacher-training materials. The evaluation model was to be adapted or developed and field-tested in conjunction with the field-testing of the FACIT materials. In addition to its use in evaluating FACIT, the model would serve as a more general framework for evaluating any competency-based program, regardless of content, educational level, or institutional setting. To enhance the generalizability of the model, plans were made to address the needs of a variety of educational decision-makers, including teachers; school administrators; and district, regional, and state-level administrative personnel.

In adapting or developing the evaluation model, the following specific objectives were to be accomplished:

1. To determine specific evaluation questions to be answered in each field-testing site
2. To determine the information needed to answer the evaluation questions
3. To determine sources for obtaining the evaluation information
4. To determine procedures for collecting and analyzing evaluation information
5. To determine evaluation decisions and constraints on making these decisions
6. To test the evaluation model on FACIT field-testing sites

Unfortunately, the above objectives could not be achieved because of problems encountered in the production of the FACIT materials. Although considerable staff time was devoted to attempts to resolve the problems with the graphic design studio holding the contract to produce the materials, finished materials were not available. The project's objectives were, therefore, modified to eliminate the collection of specific evaluative information on FACIT and on the specifics of carrying out state or local evaluations of competency-based vocational programs.

Before deciding whether to adapt an existing model or to develop a new one, the project staff searched the literature on educational evaluation to determine what was available with respect to the evaluation of competency-based education. A set of meta-evaluation criteria was used to determine the appropriateness of existing models for the evaluation of FACIT and of other competency-based vocational programs. When little that related to the evaluation of competency-based programs was found, the search was expanded to encompass educational evaluation in general.

After the most relevant evaluation models were examined in some detail, it was decided that the evaluation procedures recommended by Stufflebeam, et al.,[1] provided a comprehensive guide to the conduct of program evaluation for competency-based education, but that more guidance in program description was needed. Plans were made, therefore, to supplement the Stufflebeam model with program-description

[1]Stufflebeam, D. L., et al. Educational evaluation and decision making. Itasca, Ill.: F. E. Peacock, 1971.

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guidelines. The best elements of another well-known evaluation model[2] and of a research-based model of the process of facilitating the adoption of education innovations[3] were combined to yield the program-description guidelines necessary to successful evaluation of educational programs.

Methods

This section focuses on the criteria and decisions that led to the program-description guidelines presented in the Results section. First, the criteria used to guide the literature search are presented. Then, the decisions involved in the various phases of the literature search and of the development of the program-description guidelines are described.

Before the decision was made to focus on program description, the project attempted to locate a model that could be adopted or adapted for evaluating competency-based vocational programs. To assist the search for a satisfactory model, criteria reflecting concerns common both to program evaluation in general and to evaluation of competency-based education in particular were developed. The following is a list of the criteria.

1. The evaluation model should guide the evaluator in asking questions that are specifically relevant to competency-based vocational education--questions such as:

   a. Are the program's goals or competencies based on empirically identified needs of the school's service area?
   b. Are students able to perform on the job those skills that they have mastered in the program?
   c. How will program costs change when the whole program is individualized?

2. The evaluation model should guide the evaluator in adequately describing the program and the context in which it is implemented. Guidelines should be included for identifying or describing the following:

   a. The needs the program is supposed to meet
   b. The intended and actual physical, social, or psychological factors (both positive and negative) that affect the planning or implementation of the program
   c. The rationale and assumptions underlying the program
   d. The goals and objectives of the program
   e. The actual outcomes of the program, including those not planned for, whether positive or negative
   f. The processes, procedures, etc., that were intended or actually implemented in the program

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[2]Stake, R. E. The countenance model of educational evaluation. Teachers College Record, 1967, 68, 523-540.

[3]Hall, G. E., et al. Levels of use of an innovation: A framework for analyzing innovation adoption. Journal of Teacher Education, 1975, 26(1), 52-56.

3. The evaluation model should provide flexible guidelines for conducting the evaluation.

    a. A variety of data-collection instruments should be recommended, along with suggestions for their use.
    b. A variety of data sources should be recommended.
    c. Recommended procedures for collecting, organizing, and analyzing information should be clearly related to the evaluation questions.
    d. Guidelines should be included to facilitate the identification of appropriate decision makers.
    e. Guidelines should be included to facilitate decision making, including the establishment of standards and the assignment of weights to factors that might influence the decisions.

4. The evaluation model should provide guidelines for reporting evaluation results in a way that can be tailored to the needs of a diverse target audience.
5. The evaluation model should provide guidelines for designing evaluation plans that minimize costs and the use of outside resources in their implementation.

The above criteria, which are rather general, served mainly to generate specific questions about the evaluation models reviewed. Tables 1 and 2 are further examples of the kinds of general and specific criteria that helped in the search for a model for evaluating competency-based vocational education programs.

The search for such a model was conducted in two phases. In the first phase, the search was restricted to models specific to the evaluation of competency-based programs. In the second phase, an examination of the more general evaluation literature took place.

Although much has been written about competency-based education in recent years, there is little in the way of guidelines for conducting program evaluations. Much of what has been written about evaluation in competency-based education has dealt with the evaluation of student performance, rather than with the larger issue of program evaluation. (Note that evaluating student performance is an important element of program evaluation, but it is certainly not the only element.)

The first phase of the literature search yielded no models that adequately met the criteria listed on pages 3 and 4 and in Tables 1 and 2. There were some articles,* however, that dealt with issues that are important in program description. Relevant approaches and ideas in these articles were subsequently incorporated into the program-description guidelines; the decision to do so, however, was not made until after the search of the more general evaluation literature yielded a suitable model for conducting program evaluations.

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*Andreyka, R., & Blank, B. A checklist for the evaluation of competency-based teacher education programs. Educational Technology, January 1976, 16, 34-37.

Denton, J. J. A field-tested evaluation model to assess a CBTE program. Educational Technology, March 1977, 17, 23-27.

Hirst, B. A., Jr. The components of competency-based vocational education. American Vocational Journal, November 1977, 52, 32-35.

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TABLE 1

EVALUATION REVIEW CHECKLIST*

For Review of Designs and Reports of Evaluation Studies on Instructional Products and Systems

	Strong	Satisfactory	Weak	Not Pertinent	Recommendations
I. Context Descriptions (Overall)					
A. Description of Product/System (Overall)					
1. Overview - is there good overview of the product/system? Basic description of instructional content, teaching strategies? Is the nature of product/system clear?					
2. Objectives - clear, consice, complete statement of purpose and goals of product/system? Instructional objectives clearly stated and well organized?					
3. Use - is target population of users clearly specified? Basic delivery, dissemination procedures outlined?					
B. Purpose of Evaluation (Overall)					
1. Focus -answers what is being evaluated and why?					
2. Audiences - are audiences of the evaluation clear? Intended use of the evaluation results clear?					
3. Compatibility - describes relation of this evaluation to other evaluation work? Clear why evaluation not focused otherwise? Does the evaluation seem appropriate to this product/system? Get to the heart of thing?					
II. Evaluation Activities/Results (Overall)					
A. Evaluation Questions (Overall)					
1. Selection - are sources of evaluation questions clear? How obtained clear? Are the questions adequately related to product/system objectives? Clear why these questions?					
2. Content - is catagorization of questions clear and adequate? Do questions address concerns of (1) type, amount, direction, and level of change, (2) transfer, (3) retention, (4) side effects (5) process implementation, (6) context assessment, (7) cost effectiveness, (8) crucial comparisions, (9) educational need for system, (10) useability, disseminability					
B. Data Sources/Collection (Overall)					
1. Sampling - are pupulation and sample characteristics clear? Site selection techniques and sampling techniques adequate? Good use of comparision groups? Clear why these choices?					
2. Instrumentation - types/characteristics of instrumentation clear? How selected, developed, tested, validated clear? Instrumentation adequate to provide information? Choice of variables clear and defensible?					
C. Data Processing/Reporting (Overall)					
1. Analysis - How data scored and analyzed clear? Are analysis techniques most appropriate? Clear why these techniques? Are inferences made clear and warranted?					
2. Reporting - Reporting audiences specified? Reporting techniques appropriate?					
D. Management Concerns (Overall)					
1. Feasibility - Resources available? Reasonable allocation of resources? Is evaluation information collected worth cost? Are time lines clear and reasonable? Workable?					
2. Limitations - Are constraints, limitations, trade offs clear and defensible? Clear what not done and why? Evaluator biases, judgments calls clear?					
III. Document Characteristics (Overall)					
A. Purpose - is the purpose of the document clear? Are the information needs being met clear?					
B. Audience - are the document's intended audience specified? Is the generality-specificity level, content and format of the document appropriate for the specified audiences?					
C. Clarity - does the document read well, terms explicit and free of jargon?					
D. Integrity - do the document's sections fit well together? Good organizers, transitions, sence of unity?					
E. Conciseness - does the document come to the point? Tell the essentials? Make appropriate use of appendices and references?					

Source: AERA-sponsored workshop conducted by B. Worthen and J. Sanders; St. Petersburg, Fla., 1976.

*This checklist draws heavily on work by Scriven, Stake, Murray and Smith

TABLE 2

Considerations for Evaluation Plan:

1. Conceptual Clarity

   * Is evaluation formative or summative?
   * Is evaluation comparative or single program?
   * Is evaluation goal-directed or goal-free?

2. Characterization of the Object of the Evaluation

   * Is there a complete and detailed description of the program?

3. Recognition and Representation of Legitimate Audiences

   * Is there input from and reporting to all audiences?
   * Who is the audience for the evaluation?

4. Sensitivity to Political Problems

   * What are the constraints on data collection?

5. Information Needs and Sources

   * What are they?
   * How do they relate to evaluation questions?

6. Comprehensiveness and Inclusiveness

   * Have data related to objectives been collected?
   * Have data on side effects been collected?

7. Technical Adequacy

   * Are sampling, measurement, and design concerns accounted for?

8. Cost

   * Is the plan cost-effective?

9. Standards/Criteria

   * What are they?

10. Judgments and/or Recommendations

    * Is the program effective?
    * What recommendations can be listed?

11. Reports Tailored to Audiences

    * Do you need technical reports?
    * Do you need nontechnical reports?
    * Will feedback on interim reports be analyzed?

Source: Unknown

The same criteria used to examine the competency-based literature in the first phase were used in the second phase of the literature search. This search of the more general evaluation literature led to a detailed consideration of and subsequent adoption of the Stufflebeam guidelines for conducting program evaluation (see Table 3 for an outline of the evaluation tasks based on Stufflebeam's model). These guidelines seemed sufficiently comprehensive (according to the criteria listed on pages 3 and 4 and in Tables 1 and 2) and flexible to guide the evaluation of any competency-based program.

While the Stufflebeam model was the most comprehensive one found, it lacked sufficient guidance for describing the program to be evaluated. Thus, the search continued until it was clear that no additional information would be gained. On the basis of the literature review, it was decided to incorporate into the program-description guidelines elements of (1) Robert Stake's model for describing and judging educational programs and of (2) the Concerns-Based Adoption Model.

Stake's model was chosen because it provides evaluators with a general framework for describing educational programs. Using Stake's model, the evaluator is directed to look not only at program outcomes, but also at program processes, antecedent conditions, and the contingencies that exist between these three categories of information. In addition, the evaluator is directed to look at the congruence between what was intended in relation to the program and what actually took place. Another important selling point for the Stake model is that standards and the judgments based on those standards are related, in a one-to-one fashion, to the categories of information in the program description. Furthermore, Stake's model allows both absolute as well as comparative judgments, a feature that increases its adaptability. (See Figure 1 on page 8 for a graphic illustration of Stake's model.)

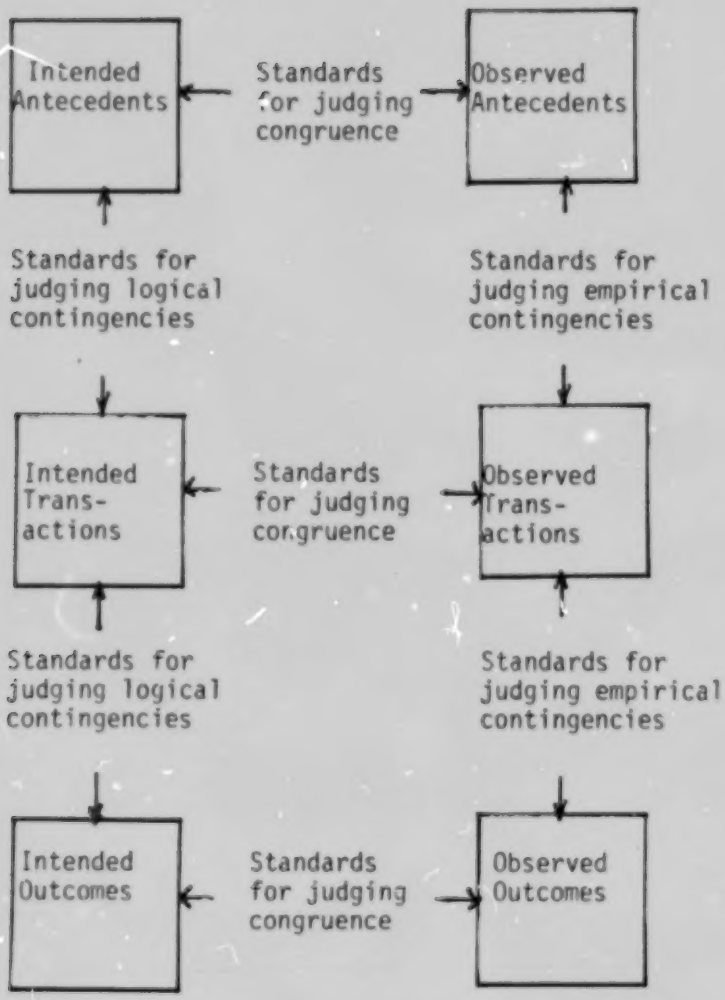
Stake's model, as comprehensive as it is, does not provide sufficiently detailed guidelines for the collection of description information about the program or its implementation. The categories of information are supplied, but the details of what to look for are not. Therefore, the guidelines for describing programs (to be presented in the Results section), while incorporating the information categories from the Stake model, also include elements from the Concerns-Based Adoption Model.

Although not intended to be an evaluation model, the Concerns-Based Adoption Model has implications for those involved in evaluating educational programs. The model, graphically depicted in Figure 2 (page 9), views the adoption of an educational innovation as a process that takes place over time and that varies from person to person depending on individual needs, concerns, capabilities, and so on. Two concepts from the model and their related instrumentation have particular significance for evaluating competency-based vocational programs. These are (1) the concept of stages of concern about the innovation (see Table 4 on page 11) and (2) the concept of levels of use of the innovation (see Table 5 on page 12).

Specifically, the concepts of stages of concern and levels of use help the evaluator to operationally describe the program as it is being implemented. Instruments and procedures have been developed to document the concerns of program users and the extent to which they are implementing the program. The model also provides for the description of the level of use within various categories of implementation. Table 6 on page 13 lists the implementation categories and their definitions.

Figure 1

Program-Description Matrix[5]



[5]Adapted from Stake, R. E. The countenance model of educational evaluation. Teachers College Record, 1967, 68(7), 523-540.

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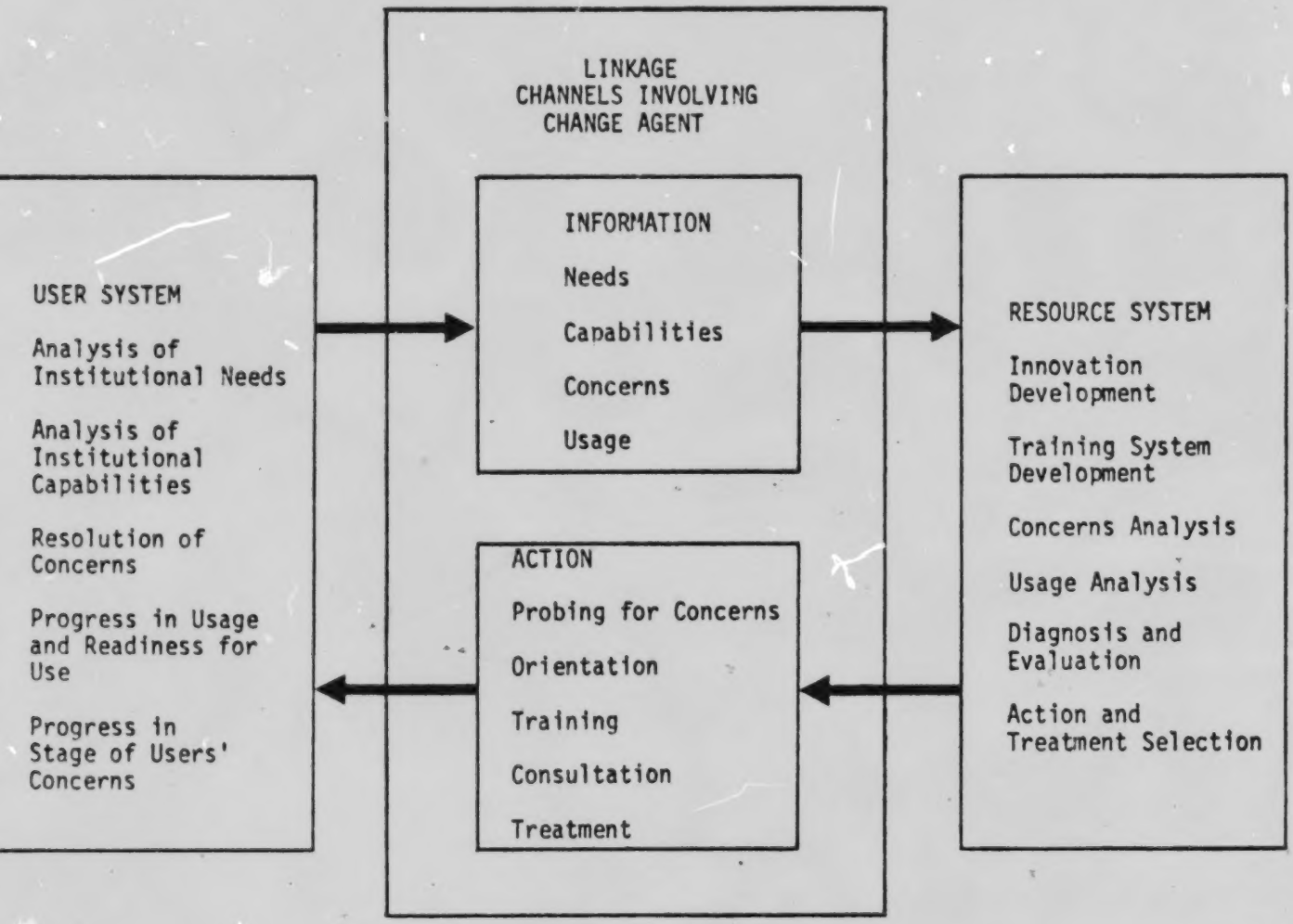
Figure 2

Components of the Concerns-Based Adoption Model[6]



[6]Taken from Hall, G. E.; Wallace, R. C.; & Dossett, W. E. A developmental conceptualization of the adoption process within educational institutions. Austin: The Research and Development Center for Teacher Education, The University of Texas at Austin, 1973.

Table 3

Evaluation Tasks and Activities[7]

I. Delineate information needs
- A. Define the system to be evaluated
  - 1. Develop a model of the system
    - a. Set system boundaries
    - b. Define elements of the system
    - c. Define characteristics of system elements
- B. Specify the decisions to be made
  - 1. Describe antecedents
  - 2. State decision setting
    - a. State decision authority
    - b. State decision responsibility
    - c. State decision influences
    - d. State clientele for information
    - e. State decision timing
    - f. Summarize decision questions
  - 3. Establish criterion variables
    - a. State questions to be answered
    - b. State alternative answers to questions
    - c. State alternative actions
  - 4. State decision rules
    - a. Set single-variable decision rules
    - b. Set multiple-variable decision rules
  - 5. Identify and utilize available evidence
- C. State evaluation policies
  - 1. State access to data sources
  - 2. State access to data base and information
  - 3. State role of evaluation authority and responsibility
  - 4. State budget and resource limitations
  - 5. State scheduling limitations
  - 6. State reporting policies
- D. State evaluation assumptions
  - 1. State sampling assumptions
  - 2. State treatment assumptions
  - 3. State measurement assumptions
  - 4. State analysis assumptions
  - 5. Model the evaluation design

II. Establish plan for obtaining information
- A. Collect data
  - 1. State information source (sample)
    - a. Establish sample size
    - b. State sampling procedures
    - c. Establish population
  - 2. State instrumentation
    - a. Match items to criterion variables
    - b. Describe instrument type
    - c. Specify items of information
  - 3. Describe collection conditions
    - a. Establish responsibility for instrument administration
    - b. Schedule instrument administration
    - c. Establish setting for administration
- B. Organize data
  - 1. State unit of organization
    - a. Establish level of disaggregation required
    - b. Set scoring or coding format
  - 2. Establish storage and retrieval requirements
    - a. Establish coding format for storage
    - b. Document storage procedures
    - c. Specify storage and retrieval facilities
    - d. Specify retrieval procedures
  - 3. Establish quality control procedures
    - a. Establish editing procedures
    - b. Provide error checks
    - c. Establish audit trail design
- C. Analysis of data
  - 1. State unit of analysis
  - 2. State analysis method
  - 3. State analysis facility

III. Provide information
- A. Prepare reports
  - 1. Define report audiences
  - 2. Depict reporting levels
    - a. Specify micro-level reports
    - b. Specify macro-level reports
  - 3. Describe reporting mode
    - a. Establish reporting media
    - b. Establish report content
    - c. Establish reporting setting
  - 4. Establish reporting schedule
- B. Disseminate reports
  - 1. State procedure for transmitting reports
  - 2. State procedure for publication of reports

[7]Adapted from Stufflebeam, D. L., et al. Educational evaluation and decision-making. Itasca, Ill.: F. E. Peacock Publishers, Inc., 1971.

Table 4

Stages of Concern About the Innovation[8]

0 AWARENESS: Little concern about or involvement with the innovation is indicated.

1 INFORMATIONAL: A general awareness of the innovation and interest in learning more detail about it is indicated. The person seems to be unworried about himself/herself in relation to the innovation. She/he is interested in substantive aspects of the innovation in a selfless manner such as general characteristics, effects, and requirements for use.

2 PERSONAL: Individual is uncertain about the demands of the innovation, his/her inadequacy to meet those demands, and his/her role with the innovation. This includes analysis of his/her role in relation to the reward structure of the organization, decision making and consideration of potential conflicts with existing structures or personal commitment. Financial or status implications of the program for self and colleagues may also be reflected.

3 MANAGEMENT: Attention is focused on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, scheduling, and time demands are utmost.

4 CONSEQUENCE: Attention focuses on impact of the innovation on students in his/her immediate sphere of influence. The focus is on relevance of the innovation for students, evaluation of student outcomes, including performance and competencies, and changes needed to increase student outcomes.

5 COLLABORATION: The focus is on coordination and cooperation with others regarding use of the innovation.

6 REFOCUSING: The focus is on exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. Individual has definite ideas about alternatives to the proposed or existing form of the innovation.

[8]Taken from Rutherford, W. L. An investigation of how teachers' concerns influence innovation adoption. Revised version of a paper presented at the annual meeting of the American Educational Research Association, Session 9.02, April 5, 1977, in New York.

Levels of Use of the Innovation [9]

LEVELS OF USE		DEFINITION OF USE
0	NONUSE	State in which the user has little or no knowledge of the innovation, no involvement with the innovation, and is doing nothing toward becoming involved.
	Decision Point A	Takes action to learn more detailed information about the innovation.
I	ORIENTATION	State in which the user has recently acquired or is acquiring information about the innovation and/or has recently explored or is exploring its value orientation and its demands upon user and user system.
	Decision Point B	Makes a decision to use the innovation by establishing a time to begin.
II	PREPARATION	State in which the user is preparing for first use of the innovation.
	Decision Point C	Changes, if any, and use are dominated by user needs.
III	MECHANICAL USE	State in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user needs than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use.
	Decision Point D-1	A routine pattern of use is established.
IVA	ROUTINE	Use of the innovation is stabilized. Few, if any, changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences.
	Decision Point D-2	Changes use of the innovation based on formal or informal evaluation in order to increase client outcomes.
IVB	REFINEMENT	State in which the user varies the use of the innovation to increase the impact on clients within the immediate sphere of influence. Variations are based on knowledge of both short- and long-term consequences for clients.
	Decision Point E	Initiates changes in use of innovation based on input of and in coordination with what colleagues are doing.
V	INTEGRATION	State in which the user is combining own efforts to use the innovation with related activities of colleagues to achieve a collective impact on clients within their common sphere of influence.
	Decision Point F	Begins exploring alternatives to or major modifications of the innovation presently in use.
VI	RENEWAL	State in which the user reevaluates the quality of use of the innovation, seeks major modifications of or alternatives to present innovation to achieve increased impact on clients, examines new developments in the field, and explores new goals for self and the system.

From the LoU Chart. Austin: Research and Development Center for Teacher Education, The University of Texas at Austin, 1975.

[9] Taken from Hall, G. E. Implications for planned dissemination, implementation and evaluation revealed in the SRI/NDN evaluation and levels of use of the innovation studies. Paper presented at the annual meeting of the American Educational Research Association, March 27, 1978, in Toronto.

Table 6

Functional Categories of Use of An Innovation[10]

The categories listed and described below represent typical behaviors of the innovation user. A user's behavior, or level of use (see Table 4), may vary from one category to another.

Category	Description
KNOWLEDGE	Knows about characteristics of the innovation, how to use it, and consequences of its use. This refers to cognitive knowledge related to using the innovation, not to feelings or attitudes.
ACQUIRING INFORMATION	Solicits information about the innovation in a variety of ways--questioning resource persons, corresponding with resource agencies, reviewing printed materials, and making visits.
SHARING	Discusses the innovation with others; shares plans, ideas, resources, outcomes, and problems related to use of the innovation.
ASSESSING	Examines the potential or actual use of the innovation or some aspect of it. This can involve simply a mental assessment or the actual collection and analysis of data.
PLANNING	Designs and outlines short- and/or long-range steps to be taken during process of innovation adoption; i.e., aligns resources, schedules activities, meets with others to organize and/or coordinate use of the innovation.
STATUS REPORTING	Describes personal position at the present time in relation to use of the innovation.
PERFORMING	Carries out the actions and activities entailed in operationalizing the innovation.

[10]Adapted from Hall, G. E., et al. Levels of use of the innovation: A framework for analyzing innovation adoption. Journal of Teacher Education, 1975, 26(1), 52-56.

Together, the Stake evaluation model and the Concerns-Based Adoption Model provide considerable guidance to the evaluator of educational programs. When used in conjunction with the Stufflebeam model, they enable the evaluator to describe the program completely and to relate that description to the needs of the appropriate decision makers.

Results

As noted in the introduction to this report, the primary objectives of the project could not be achieved, because the FACIT materials were not available. Therefore, a shift in the focus of the project led to the development of guidelines for describing competency-based programs to be evaluated. These guidelines were designed for use within any evaluation model that focuses on the decision-making purpose of evaluation, although Stufflebeam's model served as a prototype of all decision-making-oriented evaluation models.

The following assumptions, which guided the development of the program-description guidelines, have implications also for the evaluation plans that incorporate the guidelines:

1. Each competency-based vocational program differs from all others in the way it is implemented, regardless of any labels that might be applied to the nature of instruction used in the program.

2. Each competency-based vocational program changes over time in the way it is implemented.

3. The outcomes and implementation of all vocational programs are influenced by factors beyond the control of those responsible for administering and implementing the program.

4. The information obtained through any evaluation is used for making decisions affecting the implementation or continuance of the program.

5. There is no one set of techniques and strategies that is most appropriate for evaluating a competency-based vocational program.

6. The financial, personnel, and other resources used in evaluating a competency-based vocational program vary according to the nature of the program and the purpose of the evaluation.

Program-Description Guidelines

The task of describing the program to be evaluated can be broken down into two major phases, based on the specificity of the information needs delineated and the use to which the information will be put. Description activities in Phase One result in a rather global picture of the program and its context. This global picture is most often used to plan subsequent evaluation activities. Phase Two, on the other hand, provides rather detailed information necessary for making decisions regarding program improvement, continuation, and so on.

Program Description: Phase One

Most evaluation models call for a description of the program to be evaluated. The description serves primarily to focus the evaluator's efforts and helps ensure that the client and the evaluator have a common understanding of what is being evaluated. The nature of the program description in Phase One will depend to some extent on the objectives and purpose of the evaluation. For some purposes, program description in this phase will be quite detailed, while for other purposes a broad general description will suffice.

A flexible framework for describing programs in Phase One is provided by Stake. As Figure 2 illustrates, Stake's program-description matrix provides the evaluator with several broad categories in which to put the information desired. Appendix A includes definitions and examples of these categories. Because the categories in the description matrix are so broad, the evaluator is free to describe the program in accordance with his or her needs and those of the client. Appendix B contains a collection of criteria and instruments that are related to the evaluation of competency-based vocational programs. Each set of criteria or each instrument is suitable for the Phase One description of one or more aspects of the program to be evaluated.

Phase One program description is used most often in planning the evaluation. As such, it focuses on program intents, rather than on program observations. Once the program is described in terms of what was intended, the evaluator can plan the collection of information to determine whether or not what was intended actually took place.

Program Description: Phase Two

The nature of Phase Two program description varies according to the purpose of the evaluation and depends to a large extent upon what was described in Phase One. In terms of the broad categories of information needed to evaluate any competency-based program, Stake's program-description matrix is useful. As mentioned above, the evaluator in Phase Two concentrates on the behavioral description of the program.

In order to obtain more process-oriented information than is specified in Stake's program-description matrix, the methodology from the Concerns-Based Adoption Model will prove useful. Tables 4, 5, and 6 describe the main concepts related to information collection in the Concerns-Based Adoption Model. The purpose of collecting information about stages of concern (Table 4) or levels of use (Tables 5 & 6) is to determine the nature and extent of program implementation and to discover possible causal relationships.

Appendix C contains interview and questionnaire guidelines to determine the levels of use of FACIT. Using these guidelines in conjunction with an in-depth knowledge of FACIT, the evaluator can develop the necessary instruments to determine the nature and extent of FACIT implementation. The criteria and instruments in Appendix B can also be used to make information collection within the framework of the Stake matrix more precise and relevant to competency-based vocational programs.

Summary of Guidelines

Program evaluation cannot take place without a precise and detailed description of the program to be evaluated. One approach to describing competency-based programs is to break the task down into two phases. In the first phase, the program is described with just enough detail to plan the information-collection and decision-making aspects of the evaluation. Then, in the second phase, the evaluation plan is carried out by describing all aspects of the program in sufficient detail for the nature of the decisions to be made. The Stake program-description matrix provides an overall framework for categorizing the descriptive information about the program, while the Concerns-Based Adoption Model contains guidelines for collecting detailed information about program implementation. Both phases of program description are consistent with the generalized evaluation model of Stufflebeam and can be used to enhance the relevance of information collection when evaluating competency-based programs.

Conclusions and Recommendations

Because of the unavailability of the FACIT materials, the focus of the project had to be altered. Thus, instead of developing an evaluation model tailored to the needs of local institutions involved in evaluating the FACIT materials, the project focused on the need for a generalized evaluation model for competency-based education. After reviewing numerous approaches to evaluation in general as well as to competency-based education, the Stufflebeam model for conducting decision-oriented program evaluations was found to meet most criteria that are important in evaluating educational programs. Since, however, Stufflebeam's model provides little guidance in the program-description aspects of evaluation, it was decided to prepare additional program-description guidelines. The guidelines that were developed represent a synthesis of the Stake evaluation model and the Concerns-Based Adoption Model.

It would be premature at this point to draw any conclusions regarding the effectiveness or efficiency of planning evaluations based on the Stufflebeam model as supplemented with the program-description guidelines. However, the popularity of the Stufflebeam model does suggest that it will facilitate the evaluation of competency-based education. In addition, the Stake model and the Concerns-Based Adoption Model have each been used independently as the basis for numerous evaluation studies. Therefore, although no firm conclusions can be drawn, confidence in the Stufflebeam model and program-description guidelines would not be unjustified.

Several recommendations can be made regarding use of the Stufflebeam model and the program-description guidelines in evaluating competency-based programs. These recommendations apply not only to evaluating FACIT, but also to evaluating programs based on any approach to competency-based education.

1. Evaluators should use the program-description guidelines as intended and not as a sole source for ready-made evaluation instruments. That is, they should develop or obtain instruments that are most appropriate to the program they are evaluating. Since not all competency-based programs operate under the same assumptions, it would be inappropriate to compare a program against criteria that do not reflect the intents of the program originators, except when such additional criteria are consistent with the purposes of the evaluation.

2. Evaluators planning to evaluate programs developed according to FACIT procedures should become thoroughly familiar with the content of the FACIT materials. This is necessary because the guidelines for levels-of-use interviewing do not include behavioral statements reflecting FACIT implementation. These must be determined by the evaluator.

3. Since guidelines for program description have not been empirically tested, it would be appropriate for evaluators who use them to carefully document their impact on the conduct of the evaluation. Although this should not discourage their use, there is almost certainly room for improvement in the guidelines.

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APPENDIX A

Definitions and Related Examples Useful in Describing Educational Programs for Evaluation Purposes

Definitions and Related Examples Useful in Describing Educational Programs for Evaluation Purposes*

GENERAL

Definitions	Examples
Antecedents: All the existing conditions that are likely to influence either positively or negatively the transactions or outcomes of a competency-based program or product.	
Antecedents subject to change: Prior conditions existing within a setting that may affect the transaction and outcomes and that can be altered.	**Antecedents subject to change:** o The attitudes of administrators toward CBE. o The placement of teachers' aides and other paraprofessionals within the institution.
Antecedents not subject to change: Prior conditions existing within a setting that may affect the transaction and outcomes, but that cannot be altered.	**Antecedents not subject to change:** o Socioeconomic status of the students. o Climatic conditions needed for year-round instruction in the building trades.
Transactions: Activities involved in the competency-based instructional program or the use of the products being evaluated.	
Instructional transactions: Those teaching/learning activities that lead directly to mastery of program or product instructional objectives.	**Instructional transactions:** o A teacher conducts a demonstration of a job task. o A student works through a module on repairing carburetors.
Noninstructional transactions: Those activities designed to directly support the implementation of a competency-based instructional program or use of a product.	**Noninstructional transactions:** o A teacher creates a file for each class member. o Community volunteers are solicited for participation on a CBE advisory committee.

*Adapted from Stake, R. E. The countenance model of educational evaluation. Teachers College Record, 1967, 68(7), 523-540.

Definitions	Examples
Negative transactions:	Negative transactions:
All activities that obstruct or delay the implementation of competency-based programs.	o A series of bomb threats are made toward the institution.
Outcomes:	
All the results or consequences of a competency-based program or product.	
Instructional outcomes:	Instructional outcomes:
Those cognitive, affective, or psychomotor skills that have been acquired by individual learners as a result of the competency-based program or product.	o A student masters the skills required for operating a piece of equipment used on the job. o A teacher in an in-service program demonstrates a more positive attitude toward CBE.
Noninstructional outcomes:	Noninstructional outcomes:
All the results, or consequences, of a competency-based instructional program or product other than individual student achievement of cognitive, affective, or psychomotor objectives.	o A closer working relationship between institutional and community representatives is attained. o Student enrollment in vocational curriculum areas increases by 15%.
INTENTS	
Intended antecedents:	Intended antecedents subject to change:
Expectations or presuppositions about those prior conditions that may influence either positively or negatively the transactions and outcomes of a competency-based program or product.	o The initial attitudes of teachers toward CBE are expected to be positive. o Some change in the placement of teachers' aides and other paraprofessionals within the institution is planned.
	Intended antecedents not subject to change:
	o The average family outcome of students will be at least $5000 per year. o Heavy snow and winter rains will be no worse this year than in the past.

Definitions	Examples
Intended transactions: All the activities planned for a competency-based instructional program or the use of the products being evaluted.	Intended instructional transactions: o A teacher plans for a student to practice the use of a circular bandsaw for beveling four planks of lumber at a 45^{o} angle. o CBE training supervisors plan for teachers in an in-service program to analyze the hierarchical arrangement of a set of enabling objectives. Intended noninstructional transactions: o A teacher plans for a proctor to inventory available consumable resources. o CBE teachers plan for a CBE advisory committee to provide them with job-related information needed to solve goal-setting problems.
Intended outcomes: All the goals, objectives or results that a competency-based instructional program or product is designed to achieve.	Intended instructional outcomes: o Given the needed student-related and job-related information, a teacher in an in-service training program will be able to solve student goal-setting problems. o Given a group activity that requires cooperation among group members, the student will choose to contribute to the efforts of co-workers by answering their questions and assisting in their assigned tasks. Intended noninstructional outcomes: o The number of students who fail to graduate from a vocational program will be reduced by 50% over the next two years. o Teachers will share consumable and nonconsumable resources among themselves for the purposes of economy and efficiency in instruction.

OBSERVATIONS

Definitions	Examples
Observed antecedents:	Observed antecedents subject to change:
Actual prior conditions as indicated by relevant information or records, regardless of whether these conditions have been expected or assumed.	o 90% of teachers have a positive initial attitude toward CBE, as indicated by the results of questionnaires and interviews. o Seven teacher's aides and other paraprofessionals are available to help in meeting the requirements of managing CBE classrooms, according to the records of the institution.
	Observed antecedents not subject to change:
	o The average family income was found to be $3,500. o Snow and heavy rains prevented work on outside construction projects on 60% of the school days during the term.
Observed transactions:	Observed instructional transactions:
All planned or unplanned activities that actually take place in the program or all uses of the products being evaluated.	o A student bevels three planks of 2" by 4" pinewood at a 47° angle using a circular bandsaw during a forty-five minute period while a trained tutor monitors the student and provides feedback. o A group of four teachers arrange an unorganized set of enabling objectives within a procedural hierarchy during a sixty-minute in-service group activity period, which is monitored by a CBE training supervisor.
	Observed noninstructional transactions:
	o A teacher's follow-up evaluation file indicates that (s)he conducted a 30-minute interview with the employer of a former student to gather information.

Definitions	Examples
	o A report submitted by a CBE advisory committee to teachers who wish to help students solve goal-setting problems describes the availability of jobs within industries that support the surrounding community.
	Observed negative transactions:
	o According to a poll of the student body, 25% of the institution's students are under the influence of an illegal drug during the majority of school days. o During a teachers' strike, 65% of the institution's faculty did not report to work for eight school days. o A recession in the national economy causes a cut in funding to school systems.
Observed outcomes:	Observed instructional outcomes:
All the actual positive and negative consequences of a competency-based instructional program or product.	o In three out of five group activities that are monitored by a trained tutor, a student chooses to answer the questions of his co-workers and to assist in their assigned tasks. o During an in-service group activity that is monitored by a CBE training supervisor, a teacher resolves a hypothetical student's goal-setting problems to the satisfaction of his group members four out of five times.
	Observed noninstructional outcomes:
	o The student drop-out rate in an institution's vocational curriculum decreases by 20% during the first two years of CBE implementation. o Two teachers resigned their positions in opposition to CBE at the end of the first year of implementation.

STANDARDS

Definitions	Examples
Standards for antecedents: Criteria that specify different degrees of congruence between intended and observed antecedents.	Standards for antecedents subject to change: o 85% of an institution's teachers must display a positive attitude toward CBE. o The number of necessary teachers' aides and other paraprofessionals within the particular institution should be no less than 13. Standards for antecedents not subject to change: o The average family income should be at least $4,500. o Participation in the pilot-test project requires that a program use the new materials on at least 80% of the school days.
Standards for transactions: Criteria that specify the allowable differences between intended and observed transactions.	Standards for instructional transactions: o The student must bevel the wood within 1% of the assigned angel without marring it, and the assignment must be completed within 30 minutes. Standards for noninstructional transactions: o The advisory committee must make available to teachers the required job-related information within their areas of expertise. Standards for negative transactions: o The teacher strike must not disrupt the training of students.
Standards for outcomes: Criteria that specify different degrees of congruence between intended and observed outcomes.	Standards for instructional outcomes: o A teacher's resolution of a hypothetical student's goal-setting problems during an

Definitions	Examples
	Standards for instructional outcomes: continued in-service group activity must be done to the satisfaction of group members with 80% consistency. Standards for noninstructional outcomes: o The introduction of CBE in a vocational curriculum will decrease the student drop-out rate by 50% during the first two years of implementation.
JUDGMENTS	
Judgments regarding antecedents: The decisions that specify any needed courses of action on the basis of what is known about antecedent conditions.	Judgments regarding antecedents subject to change: o The initial attitudes of teachers toward CBE are positive, and no action to alter initial attitudes need be undertaken. o The number of available teachers' aides within the institution is six short of the number needed to help meet the requirements of CBE classroom management; action should be taken to hire six more teachers' aides. Judgments regarding antecedents not subject to change: o Since the average family income was below the standard, it is recommended that students in the special program not be required to purchase the course materials. o The building trades program should be dropped from the program until next year.

Definitions	Examples
Judgments regarding transactions:	Judgments regarding instructional transactions:
The decisions that specify any needed courses of action on the basis of what is known about the quality of completed transactions.	o The student did not complete the activity on beveling wood as planned; action should be taken to evaluate and possibly revise the instruction provided for this objective, and to provide the student with additional instruction.
	Judgments regarding noninstructional transactions:
	o The CBE advisory committee did not complete the activity as planned because job requirements were not reported to teachers; action should be taken to inform the committee about its functions, and to obtain job-requirements information.
	Judgments regarding negative transactions:
	o The teacher strike disrupted the training of students; action should be taken to avoid strikes in the future and to provide the instruction that was delayed.
Judgments regarding outcomes:	Judgments regarding instructional outcomes:
The decisions that specify any needed courses of action on the basis of what is known about current achievement of intended outcomes.	o The objective that deals with a teacher's ability to solve goal-setting problems was met; no action to evaluate and revise the instruction for this objective need be undertaken, and no additional instruction for this objective need be provided to this teacher.

Definitions

Examples

Judgments regarding noninstructional outcomes:

- The criteria for achieving the intended outcome of reducing student drop-out rate have not been met; action should be taken to evaluate and revise the instruction aimed at this outcome.

APPENDIX B

Criteria and Instruments for Evaluating Competency-Based Programs

Competency-Based Program Assessment Instrument

(The instrument that follows is designed to be used by program designers and implementers in evaluating the degree to which competency-based education has been implemented. Five areas are addressed: competency specifications, instruction, assessment, governance and management, and overall program effectiveness.)

Source: Burke, J. B., et al. Criteria for describing and assessing competency based programs. New York: Multi-State Consortium on Performance-Based Teacher Education, no date.

AMPLIFIED FORMAT

Competency Specifications

1.0 Competencies are based on an analysis of the professional role(s) and/or a theoretical formulation of professional responsibilities.

Indicators: 1.1 Rationale for program model and competencies is written

concrete and definitive			not written

1.2 Assumptions about learner's professional role, program constraints, and learning and instructional principles explicated

yes			no

1.3 Each competency in program can be logically linked to program model

all competencies	100% comp.	50% comp.	no comp.

1.4 Program personnel who designed program can describe rational and link competencies to model.

all personnel		only small core of developers

1.5 Entire program conceptualized as an integrated whole

total program conceptualized then specific parts developed	specific parts designed; overlap and gaps formed by analysis, then linked together	specific parts designed

1.6[1]

[1] Each criterion has an indicator added to facilitate the study of indicators unique to specific programs. Users are encouraged to add as many as are appropriate to the situation.

4.3

5.0 Competencies are specified and made public prior to instruction.

Indicators: 5.1 Required competencies and options are known to learners as they enter program.

Written statement of competencies and diagnostic procedures are provided student as he enters program.	Written requirements are available to student prior to each program part.	Students can not describe the program, its competencies, and their options.

5.2 All required competencies are specified prior to initial instruction.

All specified and published	most	competencies written as program implemented

5.3 Indicators of competence vary among individuals and from setting to setting.

Flexible indicators as appropriate	Rigid indicators required of all

5.4

6.0 Learners completing the CBE program demonstrate a wide range of competency profiles.

Indicators: 6.1 Both required and optional competencies are included in the program.

many options open to students	no options

6.2 Individual learner needs dictate program emphases.

always generally never

6.3 Required competencies and options are made known to students in advance.

always generally never

6.4 Program options are not closed.

yes no

6.5 Students may choose program options.

yes no

6.6 Learner cognitive styles, teaching setting, area of instruction aid in determining program options.

yes no

6.7

Instruction

7.0 The instructional program is derived from and linked to specified competencies.

Indicators: 7.1 Competencies determine the learning outcomes to be acquired.

All learning outcomes (knowledge, skills, etc.) of the instructional program are derived and linked to specified competencies.

Activities are not related to specified competencies.

7.2 Activities provided for the student to use in acquiring the competencies are determined by the nature of the competency: (i.e., One does not learn problem solving skills from expository teaching).

Activities are derived from and linked to the competencies to be acquired.	The relationships between activities and the competency being acquired are not evident.

7.3 The elements in evaluation instruments are directly related to specified competencies.

Each element of student evaluation instruments is directly tracable to a specified competency	There appear to be no relationships between the items in student evaluation instruments and specified competencies

7.4

8.0 Instruction which supports competency development is organized into units of manageable size.

Indicators: 8.1 The size of the instructional unit is dependent upon program variables.

The size of the instructional unit is related logically to appropriate program variables.	The size of the instructional unit is not logically established. The size varies widely.

8.2 Instructional units are organized and partitioned to provide data and feedback on learner's stage of development.

At the end of each instructional unit the learner is given feedback on progress.	The unit size is not related to the student's feedback needs.

8.3 Learner's experience with instructional units is used to determine suitability of unit size.

Student's feedback concerning the suitability of units (by length, complexity, amount of content, etc.) is used to revise units.	No attempt is made to obtain knowledge of student's experience in using units.

8.4

9.0 Instruction is organized and implemented so as to accommodate learner style, sequence preference, pacing and perceived needs.

Indicators: 9.1 Instruction provides alternative learning activities.

Instructional units provide suggested alternate learning activities which accommodate the students' learning style.	No provision is made in instructional units for individual students' learning styles.

9.2 Program sequence includes a wide range of options.

Program sequence options are known by learner.	Program sequence options are neither known or available to learner.

9.3 Instruction is paced to the learner.

Learners proceed at varying paces through each segment of the program.	Some differentiation is made in learner pacing but determined primarily by learner circumstances rather than program design.	Learners all proceed at the at the same pace through the program.

9.4 Instruction provides for learner perceived needs.

Instructional units include "learner select" options for instruction.	Instructional options for achieving competence not available to program.

9.5 The learner is given opportunities to assess effectiveness of his preferred learning styles.

There are opportunities for the student to closely examine with technical and professional assistance the learning styles preferred.	Little or no attention is given to the relative effectiveness of particular learning styles as they are applied by particular individuals in reaching their objectives.

9.6 Conferences are held with learners at prescribed intervals.

Know schedule of conferences combined with open system where conference really held when needed.	No conferences held.

9.7

10.0 Learner progress is determined by demonstrated competence.

10.1 The student is knowledgable of the general nature of competencies and criteria used to determine the extent to which performance approaches professional standards for acceptability.

Student describes competencies and the standards for acceptability.	Student not able to describe competencies request or criteria that are acceptable.

10.2 Learner progress records are adequately detailed in terms of the competencies to be acquired.

Learner progress records are adequately detailed, in terms of the competencies to be acquired.	Learner progress records not kept on file.

10.3 Learner progress records are used to chart future programs' directions.

Learner progress records are frequently used to chart program direction.	Learner progress records are seldom if ever used to chart program direction.

10.4 The demonstration of progress in acquiring the competency is the focus of attention in determining the extent to which the learner is experiencing success.

Success is determined by extent of progress in acquiring the competency.	Success is determined by some other other criterion such as amount of knowledge acquired, or number of activities completed.

10.5 The instruction management system makes provisions for students to be working at various points of development concurrently.

Instruction is modularized and organized to be carried out individually or in small groups by variable scheduling techniques.	Instruction is based on the assumption that all students should acquire the same learnings at the same time.

10.6

11.0 The extent of learner's progress in demonstrating competencies is made known to him throughout the program.

Indicators: 11.1 Learner progress records are maintained and available to all concerned (learner, instructors, counselors).

Learner progress records are accessible, adequately detailed, and open to himself, instructors, and counselors.	Learner progress records are inaccessible, inadequate, and/or closed to students.

11.2 The instructional staff (instructors and counselors) and learner periodically review progress records in conference.

Student progress conferences are held frequently.	Student progress conferences are non-existent.

11.3 The instructional management system provides for the frequent and/or continuous updating of the student's progress records.

Progress records updated on a continuing basis.	Progress records if available are only updated at infrequent (i.e., semester end) periods.

11.4 The student is provided with opportunities to acquire skill in analyzing and evaluating his own professional behavior.

In addition to being provided with information about his progress, the student is helped to acquire skill in analyzing his own professional behavior.	Little or no attention is given to the analysis of the student's progress, and none in helping the student acquire this skill himself.

11.5

12.0 Instructional specifications are reviewed and revised based on feedback data.

Indicators: 12.1 Specifications for the instructional system are explicit and all concerned (students, instructors, counselors, instructional professional services personnel, etc.) are aware of these specifications.

A list of specifications for the instructional system is published.	Neither specifications nor policies concerning the instructional system have been recorded much less made known to those involved.

12.2 Procedures have been established for having students assess the instructional system.

On a frequent periodic or continuing basis students are asked to react to the effectiveness of the procedures used in the instructional system.	No attempt is made to obtain students' reactions to the instructional procedures.

12.3 A wide range of data is considered in the analysis of the instructional system. (Student time, instructor time, instructional resources, management needs, learner performance, etc.).

An extensive collection of data is used for the analysis of the instructional system.	No attempt is made to analyze the operation of the instructional system.

12.4 Data obtained from the analysis of the instructional system as provided by student feedback are used to revise the system.

On a frequent periodic or continuing basis the instructional system is revised from data provided by student feedback.	No systematic or regular attempt is made to revise the instructional system. Changes are made primarily on demand from some condition or authority.

12.5

Assessment

13.0 Competency measures are related validly to competency statements.

Indicators: 13.1 A listing of performance indicators is included with each competency statement.

Multiple indicators are present for all competency statements	Few competency statements have multiple indicators	No competency statements have more than one indicator

13.2 Indicators are logically related to competency statements.

all competencies	some of them	none

13.3 Measuring instruments are logically related to indicators.

all competencies	some of them	none

13.4

14.0 Competency measures are specific, realistic, and sensitive to nuance.

Indicators: 14.1 Competency measures discriminate between learners who demonstrate and those who do not demonstrate competency.

All measures most of the time	Most measures most of the time	Undetermined

14.2 Measures assess consistency of performance over time.

Always	Usually	Seldom

14.3 Reliability of instruments is known and high.

Computed for all instruments and high	Some instruments	Not known

14.4 Procedures for measuring competency demonstration are specified so as to assume quality and consistency.

Generally followed and known by data collectors	Procedures not specified, known or followed.

14.5 Data collection procedures require realistic time and resource expenditures by students and staff.

Realistic	Unrealistic

14.6

15.0 Competency measures discriminate on the basis of standards set for competency demonstration.

Indicators: 15.1 Specific acceptable standards are established prior to competency demonstration for all competencies.

Standards are set and made public.	Some standards are set in advance	Standards are dependent upon individual case, decided after competency demonstration.

15.2 Standards are based upon data.

Logic, data or research is used as basis for standards.	Standards are present but primarily based upon judgment or on negotiation among developers.	Standards are unknown or dependent upon individual cases.

15.3 Competency measures provide data indicating the extent to which standards are met.

For all standards	For some standards	For no standards

15.4 Standards are realistic expectations of professional developmental.

All standards appropriate for particular phase 2 professional development.	Some standards are appropriate	Standards are not realistic for particular phase 4 program to which they are applied.

15.5 Standards are applied based on the demonstration context.

Standards may be negotiated prior to demonstration.	Standards are modified in individual cases after competency demonstration attempted.	Standards are non-resistant or rigidly applied.

15.6

16.0 Data provided by competency measures are manageable and useful in decision making.

Indicators: 16.1 Data are collected and stored in an easily retrievable form.

Data on competency measures are collected and centrally stored.	Some data are collected, storage not planned or centrally located.	Not collected or not stored.

16.2 Data are reported at pre-specified decision points.

Reports are helpful to decision makers	Some reports are made as a result of special needs.	No reports are generated.

16.3 Data are used in making programmatic decisions.

Data are generated as a basis for decision making.	Occasionally data used as a basis for decision making.	Not used.

16.4 Data collection and analysis procedures are feasible in terms of time, personnel, and resources.

Efficiently handled within resources.	Collected but seldom used because procedures are cumbersome.	Burden is on program, or not collected.

16.5 Data are easy to interpret.

Format of data analysis is clear.	Not easily interpretable.

16.6

17.0 Competency measures and standards are specified and made public prior to instruction.

Indicators: 17.1 Competency measures and standards are in a written form.

For all competency measures and standards.	Some are available.	None are written.

17.2 Competency measures and standards are specified in advance.

yes	for some	no

17.3 Students can describe competency measures and standards.

all known to them	some known	unknown to students

17.4 Procedures for demonstrating competencies are known to students and faculty.

Known to all.	Known to some.	Unknown to students.

17.5

Governance and Management

18.0 Policy statements are written to govern, in broad outline, the intended structure, content, operation and resource base of the program.

Indicators: 18.1 A formally recognized policy-making or governing body exists for the program.

A governing body is recognized as having responsibility and authority for making policies for the program.	No authority recognized to which one may turn to obtain knowledge of existing policies upon which to base program operations.

18.2 All institutions, agencies, organizations, and groups participating in the program are represented in policy decisions that affect the program.

When policies are formed all persons or groups which may be affected by those policies are represented.	No policies or policies made by one group.

18.3 Policy decisions are supported by and made after consideration of data on program effectiveness and resources required.

Data are collected, and systematically stored, and considered in reviewing, changing or creating policies.	No research base exists for policy decisions. Policies are the result of power relationships and personal opinions.

18.4 An explicit statement of policies for management and governance of the program is available to all involved or concerned.

Such a statement of policies is in printed form, current and frequently referred to by persons involved in management or governance of the program.	There appears to be no orderly statements of policies available to persons involved in management or governance of the program.

18.5 Associated with the statement of policies for management and governance of the program is a list of the competencies specified to be demonstrated for exit from the program.

There exists a manual or handbook which presents statements of competencies specified to be demonstrated for exit accompanied by interpretative narrative.	The expected outcomes of the program are not clearly available even in general statements.

18.6 Policies, organization, and management procedures are readily modified and regularly reviewed.

Process known to all; review process regular.	No known governance structure or a rigid, unmodifiable one.

18.7

19.0 Management functions, responsibilities, procedures and mechanisms are clearly defined and made explicit.

Indicators: 19.1 Management decisions reflect stated program philosophy and policy.

When management decisions are made, the decision is accompanied by a rationale which cites the program policies and/or assumptions upon which the decisions are made.	When decisions are made they are primarily forced by urgent conditions and represent an arbitrary solution derived from political rather than rational interaction.

19.2 The person or group with responsibility for decision-making has the authority and resources to implement the decision.

No person or group is required to implement a management decision unless provided with the authority and resources needed to fulfill the requirements of the decision.	Frequently persons or groups are asked to implement plans for which they have neither the resources nor the authority.

19.3 Program management and governance operations are designed to model the characteristics desired of schools and classroom in which program graduates will teach.

The criteria established for the management and governance of the teacher education program represents the kind of management and governance program which would be desirable for the schools in which the graduates are likely to teach.	The criteria used for assessing the management and governance of the teacher education program differ from those thought suitable for the schools in which the graduates are likely to teach.

19.4 Job definitions, staff selection, and job assignment responsibilities carried out by the same management-governance teams who are entrusted with other management-governance functions.

The preparation of job descriptions, the selection of staff and the assignment of personnel to tasks is a function of the management-governance team.	Various individuals in management are entrusted with various management functions. There is little or no attempt to coordinate.

19.5 Formally recognized procedures and mechanisms exist for arriving at the various levels of program management decisions.

Procedures for program management decisions and made public, used consistently, and acceptable to all involved.	Procedures for program management decisions are inconsistently followed.

Total Program

20.0 Program staff attempt to model the attitudes and behaviors desired of students in the program.

Indicators: 20.1 Faculty and staff meet regularly to work as teams.

Always	Sometimes	Never

20.2 Staff treats students with the respect and concern for support which is of the same high quality expected of graduates with their relation to school pupils.

Always	Sometimes	Never

20.3 Staff members openly share differences of philosophy and social positions so that students see the appropriateness and strength in diversity.

Always	Sometimes	Never

20.4 Instructional staff use the CBE principles in their own teaching.

Yes	No

20.5

21.0 Provisions are made for staff orientation, assessment, improvement, and reward.

Indicators: 21.1 Personnel training programs are competency-based.

Improvement of program personnel is through a CBE designed system.	Isolated activities.	No organized training program.

21.2 Evaluation profiles are kept on all staff and made available to them.

Yes No

21.3 Faculty reward structure consistent with CBE role descriptions, requirements and developement.

Yes No

21.4 Staff development activities are recognized as important as teaching, research, and publication.

Yes No

21.5

22.0 Research and dissemination activities are an integral part of the total instructional system.

Indicators: 22.1 A research strategy for validating and revising the program is operational.

Written procedures, hypotheses, date; systematically applied.	Some efforts to study results of program.	Not being done.

22.2 Reports of completed studies are used in revising program.

Numerous written reports available, used.	Data or unwritten reports available.	No reports.

22.3 Research management system is operational.

Yes, comprehensive, workable, working.	Some processes, not systematic.	Not operational.

22.4 Procedures for sharing results with other programs and for obtaining their reports are operational.

Regularly shares with at least two programs, some sharing with ten others.	Haphazard sharing of results with other programs.	No relationship other than casual ones.

22.5 Staff can describe the research strategy, on-going studies, and conclusions of previous efforts.

All staff	Some	Only for studies he is engaged in.

22.6

23.0 Institutional flexibility is sufficient for all aspects of the program.

Indicators: 23.1 Resource allocation is based on student outcomes rather than course competencies.

Resources allocation determined by objectives completed by students.	Resources allocated by course enrollments.

23.2 Additional resources (personnel, materials, facilities, funds) are provided for program development.

30% or more increase for program design.	15% increase in resources (personnel and dollars).	None

23.3 Resources are contributed by all consortium members (school districts, colleges, professions) to collaborative effort beyond individual institutional needs.

All partners contribute funds and personnel to build consortium.	At least one institution provides additional funds.	No additional funds provided.

23.4 Course, grading, and program revision procedures support the tentativeness necessary to compliment the program.

Changes readily accepted on experimental basis.	Involved procedures and numerous authorizations by committees on administrators necessary for changes.	No changes possible.

23.5

24.0 The program is planned and operated as a totally unified, integrated system.

Indicators: 24.1 The program was planned as a totally integrated system.

Total program designed prior to independent parts.	Courses compiled into a program.	Independent parts grouped together and called a program.

24.2 The program is operated as a system.

Decisions reflect consideration of the total system.	Many isolated independent decisions.

24.3 Management is by objectives.

Yes	Somewhat	No

24.4 Evaluation system provides continual feedback to assess objectives achievement for various sub-systems.

Data available and used. Program revised.	Data occasionally used.	None operational.

24.5 When making decisions on one phase of the program, impact on other sub-systems is calculated and considered.

Always	Sometimes	Never

24.6 The sub-systems are continually being modified.

Yes	Somewhat	No

24.7 Harmony in principles among various sub-systems is apparent.

Internal consistency easily apparent.	Consistency can be generally identified.	No consistency, or not considered.

24.8 The program is continually evaluated against the actual professional needs, and refined based on feedback.

Formal review structure operational; changes continually being considered.		Program not amenable to modification.

24.9

Do you Really Have a Competency-Based Program?

A Personal Self-Check

(The instrument below presents some general characteristics and products that should be part of a competency-based vocational program. Included are items that refer to program antecedents and transactions. This instrument may be used to describe intents and as a checklist for observations. Discrepancies--"no" responses--may indicate where further development or revisions are needed.)

Adapted from Hirst, B. A., Jr. The components of competency-based vocational education. American Vocational Journal, November 1977, 52, 32-35.

		Yes	No
1.	Do I have information on employment opportunities?	☐	☐
2.	Is this information current (less than two years old)?	☐	☐
3.	Do I have information on future employment opportunities for my students?	☐	☐
4.	Does my student placement record support the need for continued training?	☐	☐
5.	Do I have specific job titles identified for my program?	☐	☐
6.	Have the specific tasks and competencies for these job titles been identified?	☐	☐
7.	Do I have specific lists of tools, equipment and supplies needed to prepare students for these job titles?	☐	☐
8.	Do I know whether the tasks I teach my students are still performed on the job?	☐	☐
9.	Do I know how each task ranks in terms of the amount of worker time each consumes?	☐	☐
10.	Do I know how each task ranks in terms of its level of difficulty?	☐	☐
11.	Do I know which tasks are performed by workers of every level during the first 12-24 months on the job?	☐	☐
12.	Do I consider these factors (Questions 8-11) as I establish the relative importance of the tasks I teach my students to perform?	☐	☐
13.	Do I have a specific performance objective and a job-based measure for success for each task my students are to perform?	☐	☐

		Yes	No
14.	Do the materials I use "talk about," "show examples," and provide "learner practice?"	☐	☐
15.	Do I collect information (on student performance) that indicates the probable cause of failure of any materials/ media to bring students to the job-based measure of success?	☐	☐
16.	Do I develop new materials and media if my students have difficulty meeting the job-based measure of success?	☐	☐
17.	Do I have a means of keeping my task analysis up to date with changes in the jobs for which my students are preparing?	☐	☐

Other questions you may want to jot down for your own self-evaluation and use.

18.	_____	☐	☐
19.	_____	☐	☐
20.	_____	☐	☐

(All answers should be yes if you want a good competency-based program.)

Goal Clarification

(The following presents some items that may help the evaluator determine the actual goals of a program or product to be evaluated. On occasion, the goals stated or implied for a program or product differ from those of the institution where they are to be implemented and from those of the individual users (teachers and students). An evaluator should be aware of this discrepancy, as it may have a severe impact on transactions and outcomes.)

Source: CDS Project

1. What are the expressed goals for the program or product?

2. What are the implied (not stated) goals, as apparent from an analysis of the materials?

3. What are the discrepancies, if any, between stated and implicit goals for the program or product?

REVISED GOAL

4. What are the stated goals of the institution in terms of the program or product?

5. What are the specific objectives of the institution in terms of the program or product? _____

_____

_____

6. Are there discrepancies between the institutional goals and objectives and the revised goals for the program or product?

_____

_____

_____

INSTITUTIONAL GOAL _____

_____

_____

7. What are the stated goals and objectives of the classroom in terms of the program or product?

_____

_____

_____

8. How do classroom goals and objectives differ from the goals of the institution and the program or product?

_____

_____

_____

CLASSROOM GOALS _____

_____

_____

9. If goals differ, what are the likely effects on--

INTENTS? _____

_____

_____

9. If goals differ, what are the likely effects on--(continued)

TRANSACTIONS? _____

_____

_____

OUTCOMES? _____

_____

_____

Program-Evaluation Checklist

(The following program-evaluation checklist contains variables that should be included in the evaluation of a competency-based program. The variables listed here are general and relate only to the program itself. The checklist does not provide guidelines for specific data to be collected, nor does it address in detail institutional or person variables.)

Adapted from Andreyka, R., & Blank, B. A checklist for the evaluation of competency-based teacher education programs. Educational Technology, January 1976, 16, 36.

		Yes	No	Don't Know
ANTECEDENTS	I. Program design and development			
	A. Has the need for the program been identified?			
	B. Was the design field based?			
	C. Are certification requirements met?			
	D. Are exit requirements emphasized?			
	II. Competency identification			
	A. Is the program based on competencies?			
	B. Have the competencies been validated?			
	C. Are competencies stated?			
	III. Competency-assessment criteria			
	A. Were criteria derived from competencies?			
	B. Are level and conditions stated?			
	C. Have criteria been stated in such a way that they can be assessed objectively?			
TRANSACTIONS	IV. Learning activities			
	A. Are they focused on competency attainment?			
	B. Are they field based?			
	C. Are they available in different modes?			
	D. Are they individualized?			
	V. Competency assessment procedures			
	A. Are pre-assessment procedures included?			
	B. Is assessment based primarily on performance?			
	C. Is assessment carried out in a realistic setting?			
	D. Are the assessors qualified?			
	VI. Program implementation and operation			
	A. Is the total program competency based?			
	B. Does the program have faculty/administrative support?			
	C. Is the program field based?			
	D. Is progress determined by mastery rather than time?			
OUTCOMES	VII. Program evaluation			
	A. Is follow-up planned for?			
	B. Is field-based evaluation included in the program?			
	C. Is evaluation used for program improvement?			

An Instrument for Collecting Expert Judgments about an Educational Program

(The following presents questions to be asked about antecedents, transactions, and outcomes of a program as it is being put into operation.)

Adapted from Leiden, J. Expert judgments as evaluation data. In A. Lewy (Ed.), Handbook of curriculum evaluation. Paris, France: UNESCO, 1977. (See pages 173-174.)

		Yes	No	Don't Know
ANTECEDENTS	A. OBJECTIVES 1. Does the system include a statement of instructional objectives? 2. Is this statement detailed enough to be helpful? 3. Is this statement directed to both teacher and students? 4. If the system's objectives are unstated, are they obvious? 5. Are the objectives readily compatible with individualized or self-paced instruction? 6. Do the objectives invite the student's affective involvement? 7. Do the objectives appear to involve only cognitive development? 8. Are the objectives conceived in a tight relation to the subject matter? 9. Are the objectives conceived in relation to a student's human development?			
TRANSACTIONS	B. MANNER OF USE 1. Are all elements of the system reasonably easy to use? 2. Is it a rigid, step-by-step system? 3. Are special skills or extensive preparation required before the teacher can employ the system? 4. If equipment is included, is it easily used by the teacher and by the students? 5. Are the system's materials readily used by the students? 6. Do you know of evidence of the system's successful use in other educational settings? 7. Does the system present any unusual storage problems or problems of distribution to students?			

		Yes	No	Don't Know
TRANSACTIONS	B. MANNER OF USE--continued 8. Does using the system actively involve the students? 9. Does the system offer adequate evaluation procedures for the teacher or for the student? 10. Is there a good match between the evaluation procedures and the systems objectives? 11. Did you find the evaluation procedures adequate?			
	C. QUALITY OF CONTENT 1. Is the system's content authentic and (if applicable) accurate? 2. Is the content timely (if applicable)? 3. Are the illustrations and examples apt for your students? 4. Does the content communicate effectively? 5. Are the system's sensory aspects (sound, colour, visuals, etc.) appropriate? 6. Is the system designed for ease of student progression? 7. Is the system's vocabulary appropriate for your students? 8. Is the content presented clearly? 9. Did your students find the content relevant and interesting?			
OUTCOMES	D. QUALITY OF CONSTRUCTION 1. Does the system present any unusual problems? 2. Did you find the system sufficiently durable? 3. Are the system's elements well designed? 4. Did the system present any safety problems? 5. If the system contains equipment, does it operate reliably? 6. If equipment repairs were needed, was the repair service adequate? 7. Were such repairs required frequently? 8. Were such repairs made easily and quickly?			

Content Evaluation Questions

(The following is a list of questions addressed to trainees to be used in evaluating the content and procedures employed in a competency-based program.)

Source: Richey, R. C., & Cook, F. S. A comprehensive assessment and evaluation model for CBTE programs. Paper presented at the annual meeting of the American Educational Research Association, Washington, D.C., March 1975. (ERIC Documents Reproduction Service No. ED 117 176)

1. Did prerequisite courses, if any, give you an adequate foundation in meeting the objectives of this course?

   Yes ____ No ____ No Prerequisites ____

2. Were adequate time, materials, and facilities provided for you to achieve this objective?

   Yes ____ No ____

3. How meaningful were the assignments in relation to the mastery of this objective?

Asignments were helpful in attaining mastery	Assignments helped some, but could be improved	Could have mastered objective without completing assign-ments	Uncertain

4. How appropriate were the methods (kits, films, etc.) used in conveying the instruction to master this objective?

Appropriate-- I liked them	Were OK, but I prefer other methods	Were appropriate	Uncertain

5. Did the exit test accurately measure the behavior sought in this objective?

   Yes ____ No ____

6. Do you feel you have really mastered this objective?

Yes, I feel very competent	Yes, but need some reinforcement	Yes, but need much more instruction	Did not pass exit test

7. In hindsight, do you think you could have passed the exemption test on this objective at the beginning of the quarter without receiving instruction?

   Yes ____ No ____

8. Did you feel this objective is essential to your teaching preparation?

   Yes ____ No ____

Evaluation of Curriculum Design

(The five components of this instrument address relevant issues of curriculum design: objectives, organization of materials, methods of instruction, evaluation, and total rating of the materials. It is useful in specifying intended antecedents for programs and products and for making judgments about the status of antecedents.)

Source: Eash, M. J., Talmage, H., & Walberg, H. J. Evaluation of instructional materials. Mimeographed. Princeton, N. J.: ERIC Clearinghouse on Tests, Measurement, and Evaluation, 1975. (ERIC Document Reproduction Service No. ED 117 189)

I. Objectives

A. What is the nature of the general goals of the materials stated?
B. Are specific objectives stated for teacher use?
C. If neither of the above are stated, list what you believe are the intended objectives of the material.
D. What are the main emphases in the objectives?
E. On the scale below, rate the objectives of the materials. Please place an "X" on an exact point.

Objectives not useful to a teacher _____ 1 2 3 4 5 6 _____ Objectives give clear direction for instruction and useful for a teacher.

II. Organization of Materials (Scope and Sequence)

A. What is the scope of content covered in the materials?
B. How is the scope of the materials organized?
C. Is there a specified sequence in the material?
D. What is the basis for the suggested sequence?
E. On the scale below, rate the scope and sequence of the material. Please place an "X" on an exact point.

Scope inadequate, sequence not logical or incomplete _____ 1 2 3 4 5 6 _____ Scope adequte for grade in group, sequence tasks carefully interrelated and planned.

III. Methods of Instruction

A. What method or methods of instruction are suggested?
B. What role is emphasized in the method: teacher, pupil, or both?
C. What are the specific features of the method or methods recommended?
D. Is the suggested method one that requires the teacher to do extensive prior preparation or participate in specific training?
E. On the scale below, rate the methods of instruction. Please place an "X" on an exact point.

No methods suggested or implied that are helpful to a teacher — 1 2 3 4 5 6 — Very carefully developed methods. Very useful to both teacher and pupil.

IV. Evaluation

A. What test materials are included for the student's and teacher's use?
B. Are the test items adequate for informing a teacher of students' progress toward the instructional objectives set for the materials?
C. What do the tests measure?
D. Is there information on the tests' reliability and validity?
E. Is there any information from the producer on how the materials were tested with students when they were being developed?
F. On the scale below, rate the evaluation components of these materials and the evaluation of the materials by the producer as they were developed. Please place an "X" on an exact point.

No test materials or suggested checks on student learning included. No data on the evaluation of materials by the producer. — 1 2 3 4 5 6 — A wide range of test materials and evaluation suggestions. Evaluation data on field test conducted and materials included.

V. Total Rating of the Material

A. Draw up a brief statement on how these materials compare with those currently being used in your curriculum.
B. On the scale below, rate overall potential effectiveness of these materials. Please place an "X" on an exact point.

Materials contain many weaknesses in instructional design. Difficult to use, expensive, inferior for learning. — 1 2 3 4 5 6 — Very strong in all areas of design. Strong potential to develop a wide variety of learnings. Of high interest to teachers and pupils. Very cost effective.

Instructional Materials Evaluation Form

(The following instrument for observing antecedents and transactions is designed for curriculum-materials evaluation. With some modifications, an instrument like this could also be used to assess programs. Judgments can be made on the basis of the individual teacher's priorities and needs.)

Adapted from McLaughlin, J. A., & Trlica, J. S. Teacher evaluation of instructional materials. Educational Technology, March 1976, 16, 51-54.

ANTECEDENTS

		+	-	N/A	The materials--
I.	1.	☐	☐	☐	Fit existing terminal objectives.
	2.	☐	☐	☐	Can be extended to other phases of curriculum.
	3.	☐	☐	☐	Help accomplish the objectives of the curriculum.
	4.	☐	☐	☐	Are organized for sequential development of concepts/skills.
	5.	☐	☐	☐	Enable students to practice and maintain concepts/skills.
	6.	☐	☐	☐	Make provision for evaluating progress.
	7.	☐	☐	☐	Permit student exploration, problem solving, discovery.
	8.	☐	☐	☐	Allow flexibility and provide for individual differences.
	9.	☐	☐	☐	Allow independent use by students.
	10.	☐	☐	☐	Can be used with bilingual children.
	11.	☐	☐	☐	Are motivating to students.
	12.	☐	☐	☐	Are likely to interest the students.
	13.	☐	☐	☐	Match the reading level of the students.
	14.	☐	☐	☐	Match the vocabulary level of the students.
	15.	☐	☐	☐	Are multi-sensory in approach.
	16.	☐	☐	☐	Contain graphic illustrations.
	17.	☐	☐	☐	Contain clear, concise, easily understood instructions for students.
	18.	☐	☐	☐	Contain easily followed, appropriate instructions for the teacher.
	19.	☐	☐	☐	Are presented in an appropriate, attractive format.
	20.	☐	☐	☐	Are presented in an appropriate type size and material.
	21.	☐	☐	☐	Are of convenient, appropriate size and number of parts.
	22.	☐	☐	☐	Are of durable construction.
	23.	☐	☐	☐	Can be stored and moved, as needed.
	24.	☐	☐	☐	Require in-service training for users.
	25.	☐	☐	☐	Require adaptation for present purposes.
	26.	☐	☐	☐	Justify their cost by their teaching value.

Package Assessment Scale (PAS)

(The Package Assessment Scale (PAS), presented below, is designed to provide evaluators with specific criteria for assessing the completeness and quality of instructional materials. It may be used as an instrument for formative or summative evaluation. Modified, the items are also applicable to program evaluation.

The authors suggest that the evaluators use their own response format for the instrument (yes/no, or scale responses) and add their own items. Decisions are to be made on the basis of the needs and priorities of a given situation.

Not included in the Package Assessment Scale are items relating to extra-instructional situations and activities.)

Source: Hecht, A. R., & Klasek, K. R. PAS: A tool for developing or selecting self-instructional materials. Audiovisual Instruction, April 1975, 20, 27-29.

A. Package Components and Sequence

1. Does the package include the following components:

   a. a rationale? _____
   b. cognitive learner objectives? _____
      and
      affective learner objectives? _____
      or
      psychomotor learner objectives? _____
   c. a diagnostic pre-assessment? _____
   d. interactive learning activities? _____
   e. periodic self-assessment(s)? _____
   f. a posttest? _____
   g. package development feedback? _____

2. Is the sequence of package components logical? _____

B. Analysis of Package Components

1. Does the rationale tell:

   a. what is going to be learned? _____
   b. why this package should be studied? _____

2. Are the learner objectives:

   a. important for intended learners? _____
   b. stated in terms which include:

      1) an active verb identifying desired behavior? _____
      2) content to which the behavior applies? _____
      3) conditions under which behavior will occur? _____
      4) minimum performance standards? _____

3. Does the pre-assessment:

   a. measure learner status on each objective? _____
   b. have clear directions for completing and scoring? _____
   c. direct students to appropriate learning activities? _____

4. Do the learning activities:

   a. contribute to the achievement of package objectives? _____
   b. include clear directions? _____
   c. proceed in logical steps? _____
   d. occur in steps of proper size for intended learners? _____
   e. attract and maintain student interest? _____
   f. require active responses by learners? _____
   g. provide alternate learning activities for achieving each objective? _____
   h. employ media appropriate to package objectives? _____

5. Do the learner self-assessments:

   a. include clear directions for completing and scoring? _____
   b. provide frequent opportunity for learner self-assessment? _____
   c. direct students to appropriate learning activities? _____

6. Does the posttest:

   a. include clear directions for completing and scoring? _____
   b. measure learner status on each objective? _____
   c. parallel the pretest form, length and difficulty (if a pretest is present)? _____

7. Does the package development feedback:

   a. focus on important package characteristics? _____
   b. inlude objective and essay questions? _____

C. Package Installation and Operation

1. Does the package include an instructor's guide? _____
   If yes, does the instructor's guide:

   a. suggest ways instructors can use the package with students? _____
   b. suggest ways to help students schedule their learning time? _____
   c. suggest ways to record and report student progress? _____
   d. include evidence of package revision on the basis of user feedback? _____
   e. include evidence that appropriate package users achieve package objectives? _____

2. Are the equipment requirements of the package consistent with available audiovisual equipment? _____

3. Is media quality satisfactory? _____

4. Are package materials easy for learners to use? _____

5. Is the cost of installing and operating the package within the limits of available budget? _____

6. Is the time required for package installation and operation within the limits of local schedule and calendar? _____

Checklist for Determining the Extent to Which a Program Is Competency-Based

(The following is a detailed checklist that may be used by teachers to evaluate a program at any stage of CBE implementation. It follows the component outline of FACIT and addresses pertinent issues of CBE program planning and delivery.)

Source: CDS Project

	This is characteristic of		
	a. all of my program	b. parts of my program	c. none of my program
Goal Setting			
1. Students have an opportunity to consider all relevant information about the occupation, the training program, and themselves before making a final goal choice.	a._____	b._____	c._____
2. Students are able to reset their goals in accordance with changes in their needs.	a._____	b._____	c._____
3. Students can select goals from among a job ladder (such as nurse's aide or licensed practical nurse) that is consistent with the needs of the job market.	a._____	b._____	c._____
4. Students can select goals from among several parallel specialties (such as brake specialist or tune-up specialist) that are consistent with the needs of the job market.	a._____	b._____	c._____
Objectives			
1. Program is based on competencies derived from the job through job task analysis.	a._____	b._____	c._____
2. Competencies are specified in terms of measureable objectives which delineate the knowledge, skills, and attitudes required on the job.	a._____	b._____	c._____
3. Competencies and objectives are specified in advance for each student.	a._____	b._____	c._____
4. Each student learns only those competencies and objectives required to achieve their occupational goals.	a._____	b._____	c._____
5. Each student's competencies and objectives are sequenced according to their goals.	a._____	b._____	c._____
6. Each student's objectives are sequenced according to their instructional needs.	a._____	b._____	c._____
7. Competencies and objectives are revised to meet the needs of students and the job market	a._____	b._____	c._____

	This is characteristic of		
	a. all of my program	b. parts of my program	c. none of my program
Criterion-Referenced Testing			
1. Standards for assessing students' mastery of competencies and objectives are determined by the requirements of the job.	a._____	b._____	c._____
2. Students are assessed on **only** those competencies and objectives related to their occupational goals.	a._____	b._____	c._____
3. Each student is given an opportunity to demonstrate mastery of competencies and objectives prior to instruction.	a._____	b._____	c._____
4. Assessment procedures allow learning experiences to be prescribed on the basis of each student's needs.	a._____	b._____	c._____
Learning Experiences			
1. Individualized learning activities are used.	a._____	b._____	c._____
2. Learning experiences use a variety of media and materials to meet individual student needs.	a._____	b._____	c._____
3. Students are given enough time to master each objective rather than having to work within fixed time frames.	a._____	b._____	c._____
4. Learning experiences provide practice of skills in situations similar to those required on the job.	a._____	b._____	c._____
5. Within each learning experience, provisions are made for letting the students know how well they are doing.	a._____	b._____	c._____
6. Experts from the community (businessmen, lawyers, etc.) are used for the enhancement of learning experiences.	a._____	b._____	c._____
7. Learning experiences use a variety of grouping and tutoring strategies to meet individual student needs.	a._____	b._____	c._____
8. Modules or learning activity packages are used to allow for flexibility in meeting students' needs.	a._____	b._____	c._____
9. Learning experiences are adapted when necessary to meet individual student needs.	a._____	b._____	c._____

	This is characteristic of		
	a. all of my program	b. parts of my program	c. none of my program
Evaluation			
1. Student assessment information is used to evaluate and revise learning experiences.	a._____	b._____	c._____
2. Students' suggestions, comments, and observed behaviors are used to evaluate and revise learning experiences.	a._____	b._____	c._____
3. Student follow-up information is used to evaluate and revise learning experiences.	a._____	b._____	c._____
Instructional Management			
1. Instructional materials and resources are organized to allow open-entry, open-exit education.	a._____	b._____	c._____
2. Instructional materials and resources are organized to allow varied student pacing.	a._____	b._____	c._____
3. Instructional materials and resources are organized to allow students a role in managing their own learning.	a._____	b._____	c._____
4. Students, teacher aides, community volunteers, and other non-teaching personnel are involved in managing instructional materials and resources.	a._____	b._____	c._____
5. Computer technology is used in managing instruction (such as keeping records, assigning learning experiences, keeping inventory of resources).	a._____	b._____	c._____
General			
1. Students are held accountable for their own learning.	a._____	b._____	c._____
2. Emphasis is placed on exit requirements not on entrance requirements.	a._____	b._____	c._____
3. Students take part in program decision-making (such as deciding on objectives, learning pace, learning experiences, etc.).	a._____	b._____	c._____
4. Team approach to teaching is used to enhance learning.	a._____	b._____	c._____
5. The systems approach involving planning, monitoring, evaluating, and revising instruction is used.	a._____	b._____	c._____

Some Items to Observe When Judging Whether a Program Is Competency Based

(The list of items presented here describes activities or products that are characteristic of competency-based programs. It can serve as a checklist for deciding at which stage of CBE implementation a program is functioning and for determining the types of activities or products yet to be developed.

The CBE program components in this list follow the component outline of the FACIT training system.)

Source: CDS Project

	Pertaining to the Program	Pertaining to the Students
GOAL SETTING	Sources for obtaining job-market information and information about job requirements have been identified. Job-related information has been obtained and documented.	Student-related information has been obtained to determine whether a student's goal is appropriate. Ways to deliver goal-setting information to students have been developed. Students are being assisted in their goal-setting activities. There are ways to help students solve their goal-setting problems.
OBJECTIVES	Unit-level objectives are available for the program. Unit-level objectives have been documented and sequenced. Objectives have been validated. Where necessary, unit-level objectives have been broken down into subobjectives.	Objectives are being selected to match students' goals. Objectives are being selected to meet individual learner needs. Objectives are being sequenced to meet individual learner needs and preferences.

	Pertaining to the Program	Pertaining to the Students
CRITERION REFERENCED TESTING	Criterion-referenced tests have been obtained or prepared for each objective. Criterion-referenced tests reflect the requirements stated in the objectives. Criterion-referenced tests have been evaluated and found to be appropriate.	Criterion-referenced pretests are being administered to the students when appropriate. Criterion-referenced posttests are being administered to students following the completion of learning experiences for each objective. Administration of criterion-referenced tests is modified to meet learner needs.
LEARNING EXPERIENCES	Learning experiences are available for each objective. Alternative learning experiences are available for each objective. Instructional materials are appropriate for the learners and for the tasks to be taught.	Instructional strategies and media are selected to match student characteristics. Each student is able to proceed at at a pace appropriate for him or her. Tutors are used to help individual students. Grouping is used where appropriate.
EVALUATION	There are ways to determine which learning experiences are in need of evaluation. Data collection devices and procedures have been decided on and are being used. Instruction is being evaluated and revisions are made where necessary.	Students are encouraged to provide feedback on learning experiences. Student records are examined periodically to determine problems with instruction. Student follow-up data are collected and used as a basis for revising instruction.
INSTRUCTIONAL MANAGEMENT	An individual student record system that centers around objectives is used. Class progress records that center around objectives are being kept. A system to monitor resources has been established.	Students have access to their files in order to monitor their own progress. Students have access to resources when needed. Proctors and aides are used to facilitate classroom processes.

	Pertaining to the Program	Pertaining to Students
INSTRUCTIONAL MANAGEMENT CONTINUED	Files that permit easy access and easy monitoring have been set up. Aides and proctors are used to monitor the management system and keep it up to date.	A grading system that reflects the student's status in relation to performance on objectives is used.

Product Checklist for FACIT

(The following is a checklist of products that should result from carrying out the activities suggested in FACIT or using the skills taught through FACIT. It follows the component outline of the FACIT training system and lists products by FACIT competency.)

Source: CDS Project

GOAL SETTING

Competency A: Identifying Types and Sources of Goal-Setting Information

1. List of job-information sources

2. Information brochure containing--
   a. local market information and job outlook
   b. physical, academic, personal characteristics needed for job
   c. job characteristics
   d. training requirements

3. Sources of student information

4. Student profiles that include--
   a. needs
   b. interests
   c. job characteristics
   d. training requirements

Competency B: Helping Students Solve Goal-Setting Problems

1. Plan for diagnosing student problems
2. Plan for helping students in re-establishing goals

OBJECTIVES

Competency A: Selecting and Sequencing Objectives

1. A sequence of objectives for each student

Competency B: Analyzing Objectives

1. For each unit objective, a list of the necessary knowledge and skills that the student will be expected to master

Competency C: Writing Objectives

1. Instructionally complete objectives (unit-level objectives and enablers)

Competency D: Validating Objectives

1. A plan for validating objectives

CRITERION-REFERENCED TESTING

Competency A: Using Criterion-Referenced Pretests and Posttests

1. A plan for determining when it is appropriate to pretest a student
2. A plan for making appropriate instructional decisions on the basis of a student's pretest performance
3. A plan for making appropriate instructional decisions on the basis of a student's posttest performance

Competency B: Determining Types of Tests to Use

1. A plan for determining the appropriate kind of tests to use in measuring mastery of each objective

Competency C: Identifying Testing Requirements of Objectives

1. A plan for determining the criterion for each test to be given
2. A plan for determining the number of items to include on written tests
3. A plan for determining the number of times performance should be demonstrated on skill tests

Competency D: Developing Performance-Rating Methods

1. Checklists
2. Rating scales

Competency E: Constructing Selection Items

1. Multiple-choice tests
2. True-false tests
3. Matching tests

Competency F: Constructing Supply Items

1. Completion tests
2. Short-answer tests
3. Essay tests

LEARNING EXPERIENCES

Competencies A, B, C, D: Planning Learning Experiences Using the Functions of Instruction as a Planning Framework

1. Lesson plans for each objective
2. Plans for complete learning experiences for the students

Competency E: Choosing Media for Instruction

1. A list of available media
2. Plans for how and when different types of media will be used

Competency F: Reviewing and Selecting Instructional Materials

1. A file of materials to be used
2. Materials organized to permit easy access by the students

Competency G: Adapting Instructional Materials

1. Instructional materials, modified to meet the requirements of the student population
2. For each objective, learning packages delineating products and activities

Competency H: Individualized Pacing

1. Plans for individualized pacing

Competency I: Tutoring

1. Plans for obtaining, training, using, and monitoring tutors

Competency J: Flexible Grouping

1. Management procedures for grouping

EVALUATION

Competency A: Evaluating Learning Experiences

1. A plan for collecting and analyzing information in order to evaluate learning experiences

Competency B: Obtaining and Using Follow-up Information

1. A plan for collecting and using follow-up information in order to determine the effectiveness of learning experiences and the appropriateness of objectives

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INSTRUCTIONAL MANAGEMENT

Competency A: Keeping Progress and Performance Records

1. Records on individual student progress and on overall class progress

Competency B: Ordering and Monitoring Instructional Resources

1. A system for ordering appropriate quantities of consumable and non-consumable resources
2. A system for monitoring use of consumables and nonconsumables
3. A plan for using aides to perform routine tasks

Competency C: Allocating Instructional Resources

1. A system for managing resources so that students will be able to use resources when needed

Competency D: Using Proctors and Aides

1. A plan for selecting, training, using, and monitoring proctors and aides

Competency E: Determining Grades

1. A procedure for converting achievement and progress into letter grades

Competency F: Organizing Records

1. Instructor's file
2. Student learning progress file
3. Resource file

Question Areas for Data-Based Decision Making

(The following provides some general questions about program antecedents, transactions, and outcomes; these questions indicate areas of investigation related to objectives, resources, instructional strategies, and program costs.)

Adapted from Hall, G. E., & Jones, H. L. CBE program evaluation and data-based decision making. In Competency-based education: A process for the improvement of education. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1976.

	OBJECTIVES	RESOURCES	STRATEGIES	COST
ANTECEDENTS	Why are we not getting what we want? What are the desired outcomes?	What resources do we have? What resources do we need?	Which instructional strategy do we want to use? How should we implement? (Which adoption strategy should we use? What training is required?)	How much is it costing to plan? How much will it cost to implement? Once implemented, what will maintenance cost be? How long will materials last? How much staff time is needed to implement?
TRANSACTIONS	Does it look as if we are going to get the outcomes we want? What unexpected outcomes are we getting?	Exactly what resources are needed? Will our resources support CBE on a regular basis?	Are the instructional strategies working? What changes must be made in the strategies? Is further faculty training needed? Will everyone be able to do his or her part?	What is it costing to implement? What do the maintenance costs now look like?
OUTCOMES	What outcomes are we regularly getting? What unexpected outcomes are we getting? What new needed outcomes have been identified?	What resources are now freed up? What unexpected resources are being consumed?	How effective were the implementing strategies? How effective are the instructional strategies?	How much did it cost to plan for and implement this innovation? How much is it costing to maintain?

Competency-Based Program Evaluation Criteria

(The chart following details criteria that may be applied in evaluating a professional training program that is competency based.)

Adapted from Houston, W. R., et al. Criteria for describing and assessing competency based programs. In W. R. Houston (Ed.), Competency assessment, research, and evaluation. A report of a national conference, University of Houston, March 12-15, 1974. Washington, D.C.: American Association of Colleges for Teacher Education, 1974. (See pages 169-171.)

	Competency Specification	Instruction	Assessment
ANTECEDENTS	• Competency statements are specified and revised on the basis of an analysis of job definition and a theoretical formulation of professional responsibilities. • Competency statements describe outcomes expected from the performance of profession-related functions, or those knowledges, skills, and attitudes thought to be essential to the performance of those functions.	• The instructional program is derived from and linked to specified competencies. • Instruction that supports competency development is organized into units of manageable size.	• Competency measures are validly related to competency statements. • Competency measures are specific, realistic, and sensitive to nuance. • Procedures for measuring competency demonstration assure quality and consistency. • Competency measures allow for the influence of variables in setting upon performance.
TRANSACTIONS	• Competencies are treated as tentative predictors of professional effectiveness and subjected to continual validation procedures. • Competencies are specified and made public prior to instruction.	• Instruction is organized and constituted so as to accommodate learner style, sequence preference, pacing, and perceived needs. • The extent of learner's progress in demonstrating competencies is made known to him or her throughout the program. • Instructional specifications are reviewed and revised on the basis of learner feedback data.	• Assessment procedures and criteria are described and made public prior to instruction.
OUTCOMES	• Competency statements facilitate criterion-referenced assessment. • Learners completing the CBE program demonstrate a wide range of competency profiles.	• Learner progress is determined by demonstrated competency.	• Competency measures discriminate on the basis of standards set for competency demonstration. • Data provided by competency measures are manageable and useful in decision making.

	Governance and Management	Staff Development	Total Program
ANTECEDENTS	• There are statements of policy that dictate in broad outline the intended structure, content, operation, and resource base of the program, including the teaching competencies to be demonstrated for exit from the program. • Management functions, responsibilities, procedures, and mechanisms are clearly defined and made explicit.	• Provisions are made for staff orientation, assessment, and improvement.	• The program is planned and operated as a totally unified, integrated system.
TRANSACTIONS	• Formally recognized procedures and mechanisms exist for arriving at policy decisions. • A formally recognized policy-making (governing) body exists for the program. • All institutions, agencies, organizations, and groups participating in the program are represented in policy decisions that affect the program.	• Staff-development programs are based upon and engaged in after consideration of data on staff performance.	• Research and dissemination activities are an integral part of the total instructional system. • A research strategy for the validation and revision of program components exists and is operational. • A data-based management system is operational. • Procedures for systematic use of available data exist.
OUTCOMES	• Policy decisions are supported by, and made after consideration of, data on program effectiveness and resources required. • Management decisions reflect stated program philosophy and policy.	• Program staff attempt to model the attitudes and behaviors desired of students in the program.	• Institutional flexibility is sufficient for all aspects of the program. • Reward structure in the institution supports CBTE roles and requirements. • Financial structure (monies and other resources) in the system supports collaborative arrangements necessary for the program.

	Governance and Management	Staff Development	Total Program
ANTECEDENTS	• The identified professional with responsibility for decision has authority and resources to implement the decision. • Program operations are designed to model the characteristics desired of schools and classrooms in which program graduates will teach. • Job definitions, staff selections, and responsibility assignments are linked to the management functions that exist. • There are formally recognized procedures and mechanisms for arriving at the various levels of program-management decisions.	NA*	NA
TRANSACTIONS	NA	NA	NA
OUTCOMES	NA	NA	• Grading and program-revision procedures are flexible.

*Not applicable

Measures That Can Be Employed for Program Description

(The following is a summary of suggested measures for program description. The references for the original documents of which this list is a summary will follow this summary outline.)

Adapted from Sechrest, L. Use of innocuous and non-interventional measures in evaluation. In B. R. Worthen & Y. R. Sanders Educational evaluation: Theory and practice. Worthington, Ohio: Charles A. Jones Publishing Co., 1973. (See pages 283-303.)

I. Antecedent measures

A. Pupil background files

1. Mental ability scores
2. Past achievement
3. Sex
4. Father's occupation
5. Ethnic background

B. Community records

1. City records
2. Chamber of commerce files
3. Etc.

C. Questionnaire techniques

1. Attitude measures
2. Demographic measures

D. Measurements of cost

1. Facilities
2. Program
3. Personnel
4. Student

E. Teacher-background files

1. Training
2. Experience
3. Ethnic background
4. Sex
5. Length of time spent in jobs

F. Curricular-context description

1. Descriptive characteristics (media, sources, time needed, style, cost, availability, user data, content, characteristics of curriculum forms)

2. Rationale and objectives
3. Required conditions (pupil characteristics, teacher capabilities and requirements, community and school requirements, articulation between program areas)
4. Content characteristics (cognitive content, affective content, psychomotor skills)
5. Instructional theory and teaching strategies
6. Overall assessment of curriculum (other descriptive data, effects reported or predicted by these sources, recommended uses)

II. Transaction measures

A. Curriculum-implementation description

1. Objectives used (implicit and stated)
2. Organization of materials
3. Methodology employed
4. Evaluation techniques

B. Environmental measures

C. Interaction analysis

III. Outcome measures

A. Cost/benefit techniques
B. Sampling techniques
C. Computer-assisted testing techniques
D. Empirical scoring techniques
E. Sequential testing techniques
F. Scale construction techniques

Original sources:

Eash, M. J. Developing an instrument for the assessment of instructional materials (Form IV). Paper presented at the annual meeting of the American Educational Research Association, Minneapolis, Minn., March 1970.

Morisett, I., & Stevens, W. W. Steps in curriculum materials analysis outline. Mimeographed. Boulder, Colo.: Social Science Education Consortium, University of Colorado, 1967.

Sjogren, D. C. Measurement techniques in evaluation. Review of Educational Research, 1970, 40, 301-320.

Tyler, L. L., & Klein, M. F. Recommendations for curriculum and instructional materials. Mimeographed. Los Angeles: University of California at Los Angeles, 1967.

Information Categories for Evaluation Data Collection

(The following suggests some general data for making decisions about a program or product. Although not explicitly stated here, data suggested can and should be applied to intents and observations.)

Adapted from Foley, Walter. The future of administration and educational evaluation. In Evaluation of education. The Educational Technology Review Series, No. 11. Englewood Cliffs, N. J.: Educational Technology Publications, 1973. (See page 72.)

ANTECEDENTS

(Input) I. Systems variables
- A. Pupil data
- B. Staff data
- C. Facility data
- D. Financial data
- E. Curriculum data
- F. Other data

II. Environmental constraints

III. Input constraints
- A. Pupil-selection criteria
- B. Staff-selection criteria
- C. Other criteria

TRANSACTIONS

(Process) I. Organizational cycle variables
- A. Pupil tasks and interaction
- B. Staff tasks and interaction
- C. Extra-setting tasks and interactions
- D. Other data

II. Environmental contraints

III. Process constraints

OUTCOMES

(Output) I. Termination variables
- A. Pupil data
- B. Staff data
- C. Facility data
- D. Financial data
- E. Curriculum data
- F. Other data

II. Environmental constraints

III. Output constraints
- A. Pupil objectives
- B. Staff objectives
- C. Other objectives

Program Evaluation Information

(The following is a list of the kinds of information that are potentially available for evaluating comeptency-based educational programs. The list is organized according to the techniques used to collect the information. Some of the information listed relates to program antecedents, some to program transactions, some to program outcomes, and some to all three data-collection categories.)

Adapted from Metfessel, N. S., & Michael, W. B. A paradigm involving multiple criterion measures for the evaluation of the effectiveness of school programs. In B. R. Worthen and J. R. Sanders (Eds.), Educational evaluation: Theory and practice. Worthington, Ohio: Charles A. Jones Publishing Co., 1973.

1. Cognitive and affective outcome data obtained from standardized instruments:

   - o Scores on achievement and ability tests
   - o Self-reports regarding attitudes, values, opinions, interests, and so on
   - o Ratings of the quality of student products
   - o Assessments of psychomotor and physical-fitness skills

2. Cognitive and affective outcome data obtained from teacher-made instruments:

   - o Student responses to incomplete sentences
   - o Student interview responses
   - o Peer nominations and recommendations
   - o Student questionnaire responses
   - o Self-concept information
   - o Self-evaluations of achievement, adjustment, etc.
   - o Attitude information derived from role playing, picture interpretation, and so on
   - o Scores on teacher-made achievement tests
   - o Teacher observations of classroom behavior

3. Behavioral outcome data of a general nature obtained by nontest means:

   - o Student absences and tardiness
   - o Records of critical incidents
   - o Records of appointments kept or broken
   - o Information on assignments completed
   - o Autobiographical information
   - o Awards or other indications of significant achievement
   - o Case histories including significant events in students' lives
   - o Students' requests for changes in program or teacher
   - o Students' educational, vocatinal, or leisure-time choices
   - o Student interactions
   - o Disciplinary actions
   - o Dropout rate
   - o Elected positions held

- o Participation in extracurricular activities
- o Grade-placement information
- o Grade-point average
- o Student grouping patterns
- o Completion of homework assignments
- o Pursuit of leisure activities
- o Use of library
- o Student course load
- o Peer-group participation
- o Anti-social and asocial student behaviors
- o Referrals by counselors, psychologists, etc.
- o Student self-referrals
- o Social mobility
- o Student transfers

4. Behaviors of teachers and other school personnel determined by nontest means:

- o Published articles
- o Attendance at professional meetings, summer school, continuing education classes, etc.
- o Elective offices
- o Grade-point average in postgraduate courses
- o Student-teacher and student-counselor ratio
- o Correspondence about teachers, counselors, administrators, and other school personnel
- o Membership in professional organizations
- o Congruence between program-implementation requirements and the behavior of program personnel
- o Outside jobs held by school personnel
- o Nominations for outstanding service
- o Ratings of professional competence, skills, and attitudes
- o Staff resignations and dismissals
- o Staff transfers

5. Relevant community behavior determined by nontest means:

- o Alumni participation in school activities
- o Public attendance at school events, school board meetings, and so on
- o Parent-teacher, parent-counselor, and parent-administrator conferences requested by school
- o Correspondence from parents and other community members regarding school events, outcomes, etc.
- o Parental responses to student grades, behavior, and so on
- o Telephone calls from parents and other community members regarding school events, outcomes, etc.

Ways by Which Program-Description Information Can Be Reported

(The following shows some reporting techniques for documenting data relevant to a competency-based program.)

Adapted from Richey, R. C., & Cook, F. S. A comprehensive assessment and evaluation model for CBTE programs. Paper presented at the annual meeting of the American Educational Research Association, Washington, D. C., March 1975. (ERIC Document Reproduction Service No. ED 117 176)

1. Status Reports, which include--

   a. a list of objectives for a class
   b. number of students passing objectives
   c. date each passed
   d. number of students repeating an objective

2. Histograms, which include--

   a. number of students passing the exemption tests
   b. number of students passing the exit tests
   c. time required to complete each objective
   d. number of students repeating an objective

3. Curriculum status reports, which include--

   a. a list of students in the curriculum area
   b. a list of all objectives completed
   c. date of completion
   d. a list of objectives not completed
   e. number of students repeating an objective
   f. recorded student problems

4. Student status letters, which include--

   a. a list of all objectives to date
   b. a list of objectives completed
   d. dates of completion
   e. special message indicating next steps

Information Collection for Transactions

Occurring in a CBTE Program

(The questions below provide ideas for the types of data that can be used to assess specific transactions occurring in a competency-based program. Antecedents and outcomes for intents and observations are not addressed specifically in this list.

In addition to the questions themselves, sources and techniques for obtaining input that will answer the evaluation questions are listed.)

Adapted from Loucks, S. F. Exhibit 10.11: Evaluation questions. In G. E. Hall & H. L. Jones, Competency-based education: A process for the improvement of education. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1976. (See pages 290-294.)

QUESTIONS	SUBJECTS	KIND OF INSTRUMENT
I. FOR THE TOTAL PROGRAM, WHAT ARE POTENTIAL SOURCES OF FAILURE?		
A. What is the quality of interpersonal relationships among staff and students?	Faculty Students Cooperating teachers	Questionnaire
B. Are communication channels adequate?	Faculty Students Cooperating teachers	Questionnaire
1. Do you always know what is expected of you?	Students	Questionnaire
2. Do you know what other team members and cooperating teachers are doing with the same students?	Faculty	Questionnaire
3. Do you know what students are doing in class?	Cooperating teachers	Questionnaire

QUESTIONS	SUBJECTS	KIND OF INSTRUMENT
C. Are resources adequate?	Faculty Students Cooperating teachers LRC staff	Questionnaire
D. Are more needed?	Faculty Students Cooperating teachers LRC staff	Questionnaire
1. What materials are being used?	LRC staff	Questionnaire Materials use list
2. What materials are not being used?	LRC	Questionnaire Materials use list
E. Are physical facilities adequate?	Faculty Students	Questionnaire Observation*
1. Are designated ones being used?	Faculty Students	Questionnaire Observation*
F. Is staff adequate?	Faculty Students Cooperating teachers	Questionnaire
1. Are there enough faculty members to meet student needs?	Faculty Students Cooperating teachers	Questionnaire
2. Do staff members provide good models?	Faculty Students Cooperating teachers	Questionnaire
3. Are staff members acting as guides, facilitators, discussion leaders rather than information givers?	Students	Questionnaire
G. Is time schedule adequate?	Faculty Students Cooperating teachers	Questionnaire
1. How are staff spending time?	Faculty Cooperating teachers	End-of-day reaction sheets given random days once a week
2. How are students spending time?	Students	

QUESTIONS	SUBJECTS	KIND OF INSTRUMENT
H. Are logistics being handled adequately? 1. Are materials available when needed? 2. Are organizational arrangements always worked out in advance? 3. Is LRC meeting needs?	Faculty Students Cooperating teachers LRC staff	Questionnaire
I. Are participants satisfied in general?	Faculty Students Cooperating teachers	Open-ended questionnaire given once a week
J. What specific problems are perceived?	Faculty Students Cooperating teachers	Open-ended questionnaire given once a week
II. ARE PROGRAM COMPONENTS BEING IMPLEMENTED?		
A. Have the competencies been stated?	Faculty	Interview
1. Are they public?	Students	Interview
B. Do the competencies determine instruction?	Faculty	Interview
C. Is the student assessed on attainment of competencies?	Students	Interview
D. Are modules being used for instruction?		Observation**
E. Are students using modules?	Students LCR staff	Interview Observation** Materials use list
F. Do faculty share the same students?	Faculty	Interview

QUESTIONS	SUBJECTS	KIND OF INSTRUMENT
G. Does the team meet to share planning?	Faculty	Interview Minutes of team Meetings
H. Is student time blocked?	Faculty Students	Interview
I. Is the time that is blocked used for instruction or related activity?	Faculty Students Cooperating teachers	Observation End-of-day reaction sheets
J. Do the students spend the majority of time in the schools?	Students	Observation*
K. Is instruction related to experiences in the classroom?	Faculty Students	Observation*
L. Is time spent with children?	Students	Observation*
III. WHAT IS ACTUALLY TAKING PLACE?	Faculty Students Cooperating teachers LRC staff	Observation* ** ***

* Observation in schools.
** Observation in seminars.
*** Observation in LRC.

Four-Phase Evaluation Model

(The suggestions below are an extension of the Denton CBTE evaluation model to occupational training programs in general. What to assess is addressed, as well as how to use the information obtained through assessment in evaluting the training program. With respect to the categories of the Stake model, the Denton model is incomplete; it does not address explicitly antecedents and transactions. Nor does the Denton model deal with program implementation from a levels-of-use perspective. Its primary concern is with program effectiveness.)

Adapted from Denton, J. J. A field-tested evaluation model to assess a CBTE program. Educational Technology, March 1977, 17, 23-27.

Phase One: Monitoring Content Acquisition

1. Data collection--Data collected during this phase enables the evaluator to describe the program primarily in terms of cognitive and affective outcomes.

Information Desired	Methods/Means
a. Student achievement	a. Examination of the number of students mastering each objective, the number of mastery attempts, and so on.
b. Student attitudes toward learning experiences	b. Questionnaire and interview assessment of student opinions about the learning experiences.

2. Data use--The program-description data collected during this phase is used to revise in-class learning experiences, especially any modules or other materials used to teach the concepts and theory of the occupational program.

a. Evaluation data on learning materials: modules, textbooks, multi-media materials, manuals, etc.	a. Solicitation of student feedback (informal comments or questionnaires) on the appropriateness of learning materials: ease of comprehension, organization, media employed, practice exercises and tests, completeness of the information presented, etc.
b. Evaluation data on learning activities	b. Solicitation of student feedback on the appropriateness of the in-class activities: accessibility of materials, availability of supplies and equipment, supervision in practice activities, personal attention when explanations are needed, etc.

Phase Two: Knowledge and Skill Assessment

1. Data collection--Data collected during this phase enable the evaluator to describe final cognitive outcomes and student performance on hands-on skills.

Information Desired	Methods/Means
a. Student achievement in the theoretical aspects of a course or program.	a. Posttest data on terminal objectives. Level of mastery achieved by the students.
b. Student performance on hands-on skills acquired within the classroom situation.	b. Performance ratings (on rating scales or performance checklists) that have been made in in-classroom demonstration of specific skills using actual objects or simulations.

2. Data use--Data collected during this phase enable the evaluator to suggest or make revisions in objectives or presentation of content, or in the methods used in teaching specific occupational skills.

a. Evaluative information on appropriateness of objectives.	a. Students' test performance on terminal cognitive objectives. Observation of students in their application of knowledge to practical problems. Review of objectives by content experts or professionals in the field.
b. Evaluative information on students' performance of hands-on skills.	b. Observation during demonstration: documentation of skills or subskills that have not been acquired completely or that are regularly carried out incorrectly by students. Direct input from students on those skills for which they feel they require more practice.

Phase Three: Student and Skill Assessment in a Real Setting

1. Data collection--Data collected during this phase enable the evaluator to describe student outcomes as they relate to application of skills in a realistic situation.

a. Student performance in an actual job situation.	a. Observation of students during practicum work by practicum supervisors or the teacher, using rating scales or performance checklists.

2. Data use--Data collected in this phase enable the evaluator to judge whether the skills acquired in the classroom are transferred to the actual job situation.

Information Desired	Methods/Means
a. Evaluation input from practicum supervisors (shop foremen, supervising nurses, etc.) on student practicum performance.	a. Interviews with on-the-job practicum supervisors on student performance or lack of skills.
b. Evaluation input from teachers.	b. Ratings by teachers while they observe students during field experience.
c. Evaluation input from students on field experience.	c. Interviews with students to determine their feelings about their level of competence in terms of applying skills learned in the classroom to realistic situations.

Phase Four: Follow-up Assessment

1. Data collection--Data collected during this phase permit the evaluator to make descriptive statements about overall program effectiveness.

a. Student performance on the job as viewed by the employer.	a. Periodic interviews with employers about level of competence and number of skills that students demonstrate or lack.
b. Student performance on the job as viewed by the former students themselves.	b. Periodic interviews with students about the learning experiences and their relationships to the actual job requirements. Inquiry into the skills purported to be taught through the program and those actually taught, and skills that are needed but haven't been taught.
c. Outside-observer impressions of former-student performance on the job.	c. Ratings by the evaluator or other outside person (not the teacher, employer, or student) of former-student performance on the job. An observation instrument that lists job behaviors or tasks should be used.

2. Data use--Data collected in Phase Four can be used to suggest or make revisions in the objectives being taught and in the learning experiences.

Information Desired	Methods/Means
a. Skills required on the job, but not taught through the program.	a. Direct input (interview or questionnaire) from employers and former students on skills not acquired through the training program.
b. Learning experiences that have been particularly effective or that have been ineffective.	b. Direct input obtained from former students during interviews relating their job experiences to the learning experiences.

APPENDIX C

Levels-of-Use Interview or Questionnaire Focal Points

Levels-of-Use Interview or Questionnaire Focal Points

Level of Use	Knowledge Category
Level 0 Nonuse	1. Knows nothing about FACIT. 2. May know only that Florida has undertaken a move toward competency-based education.
Level 1 Orientation	1. Knows what competency-based education means in general. 2. Knows that FACIT is one of the state's efforts in helping to implement competency-based education. 3. Knows something about the development of FACIT. 4. Is familiar with the components of FACIT. 5. Knows which components (skills areas) are most important for him or her.
Level 2 Preparation	1. Knows what may be involved in implementing FACIT: a. Knows the sequence for implementing FACIT components. b. Knows the time frame for implementing individual components. c. Knows the resources required to implement the various components. d. Knows the skills that need to be acquired. e. Knows the managerial tasks that will have to be carried out. f. Knows what cooperation is needed from other personnel. 2. Knows which of the procedures used in the past can be continued within the framework of CBE and FACIT.
Level 3 Mechanical Use	1. Knows the processes involved in the daily planning for a competency-based, individualized classroom in relation to: a. Objectives b. Learning activities c. Assessment of students d. Management and budgeting e. Evaluation of instruction f. Student-teacher noninstructional interaction 2. Knows the daily routine of implementing chosen FACIT components in relation to: a. Resource requirements b. Student activities c. Managerial tasks d. Evaluation tasks

Level of Use	Knowledge--Continued
Level 4a Routine Use	1. Knows how to proceed with long-term classroom planning: a. Knows how to set long-term student goals. b. Knows how to prepare, sequence, and refine objectives. c. Knows how to sequence learning activities and prepare individual learning plans. d. Knows how to assess and report competencies. e. Knows how to manage instruction, including resource allocation. f. Knows how to meet administrative requirements. 2. Knows how to schedule and conduct instruction in a competency-based system.
Level 4b System Refinement	1. Knows how to identify problems in the classroom environment caused by the use of procedures suggested through FACIT. 2. Knows where to look for alternatives to procedures suggested through FACIT. 3. Knows how to identify and integrate FACIT procedures with previously used classroom procedures or other procedures that show more promise.
Level 5 Integration	Knows how to coordinate the procedures of his or her classroom with those of other users of FACIT and other CBE systems for the purpose of making the CBE system more effective and efficient. a. Knows how to articulate his or her program with those of other instructors to facilitate student transition from lower to higher levels or across programs. b. Knows how to articulate procedures and content with other instructors to avoid duplication of effort. c. Knows how to take a group approach to instructional planning and delivery so that use of expertise can be maximized and instructional delivery can be optimized.
Level 6 Renewal	1. Knows how to determine ineffective FACIT procedures or procedures detrimental to students. 2. Knows ways in which FACIT procedures can be used in conjunction with other procedures or could be replaced by other systems.

Level of Use	Acquiring Information Category
Level 0 Nonuse	1. Takes no initiative to acquire information about FACIT or other CBE-implementation efforts. 2. Reads or absorbs descriptive information about FACIT or other CBE-implementation efforts only when (s)he has come upon it incidentally.
Level 1 Orientation	1. Takes some initiative to acquire descriptive information about FACIT. a. Attends FACIT-awareness workshop. b. Discusses FACIT with other users who are more informed. 2. Attends FACIT-orientation workshop. 3. Obtains materials that (s)he plans to read through and implement.
Level 2 Preparation	1. Attends any in-depth workshops dealing with the individual component(s) that (s)he has chosen. a. Obtains any available supplemental materials concerning the component(s) that (s)he will be working through. b. Obtains products that would result from above-mentioned workshops. 2. Receives information from other FACIT users concerning actual requirements of implementing FACIT procedures.
Level 3 Mechanical Use	Obtains information concerning the conditions that are necessary for managing the implementation of FACIT: a. Availability of materials and supplies or of funds to acquire materials and supplies b. Availability of teacher planning time c. Availability of administrative support
Level 4a Routine Use	Makes no special effort to seek additional information as part of his or her ongoing use of FACIT.

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Level of Use	Acquiring Information--Continued
Level 4b System Refinement	1. Obtains information on how FACIT procedures could be made more efficient. This could be done by-- a. Examining use of resources and materials; b. Discussing with other users the possibility of sharing learning experiences, teacher expertise, and other resources; c. Examining other teachers' use of similar FACIT concepts; and d. Comparing FACIT with traditional methods for the purpose of deciding which is more efficient. 2. Obtains information on how FACIT procedures could be made more effective. This could be done by-- a. Examining student progress files of own students, b. Discussing student progress with other teachers who use FACIT, and c. Discussing new procedures with students for the purpose of determining whether students find these procedures easy to understand and to use.
Level 5 Integration	Obtains information on how FACIT procedures may be effectively combined with old procedures. a. Decides which FACIT and which new procedures work best alone. b. Decides which procedures work best when combined.
Level 6 Renewal	Obtains information about other CBE-implementation procedures that could be used to supplement FACIT procedures or to replace ineffective FACIT procedures.

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Level of Use	Sharing Category
Level 0 Nonuse	Does not communicate with others about FACIT beyond possibly acknowledging that FACIT exists.
Level 1 Orientation	Discusses FACIT with others in general terms as to the following: a. Development of FACIT b. Its components c. The appropriateness of FACIT procedures in the classroom d. The appropriate sequence of FACIT components e. A rationale (intended consequences) for implementation
Level 2 Preparation	1. With other beginning and current FACIT users, discusses the following: a. Necessary resources b. Necessary activities c. Possible strategies for dealing with constraints (time, resources, etc.) 2. Shares with other potential users any solutions to constraints and considers solutions that others may have to offer.
Level 3 Mechanical Use	1. Discusses with other FACIT users management and logistical procedures and difficulties encountered with FACIT. 2. Shares resources and materials used to reduce management problems. 3. Shares with others any possible solutions to managerial and/or logistical difficulties.
Level 4a Routine Use	Discusses current use of FACIT without concern for making modifications.
Level 4b System Refinement	1. Discusses the ways (s)he has integrated old procedures with FACIT to produce a more effective and efficient learning program. 2. Exchanges ideas, curriculum plans, and materials with other FACIT users.
Level 5 Integration	Exchanges ideas and products with other teachers in order to improve his or own system. The teacher's primary intention is to better meet the needs of students by modifying use of FACIT.

Level of Use	Sharing--Continued
Level 6 Renewal	1. Discusses and evaluates ideas and materials [illegible] from sources other than FACIT. 2. Discusses with others the possibility of adopting another system that seems more appropriate than FACIT or of integrating with FACIT other systems that are likely to enhance FACIT. 3. Discusses with others the possibility of a joint effort for revising the FACIT system or developing a new system more appropriate than FACIT.

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Level of Use	Assessing Category
Level 0 Nonuse	1. Has not assessed his or her own program to determine whether it shows elements of competency-based programs. 2. Has not assessed the program to determine whether FACIT competencies are already used.
Level 1 Orientation	Analyzes current program in order to decide whether or not to use FACIT. a. Determines the extent to which his or her program is competency-based. b. Identifies characteristics of his or her program that are present in FACIT. c. Identifies characteristics of FACIT that are not found in his or her program.
Level 2 Preparation	Prepares for first use of FACIT by analyzing current program and detailed requirements for use of FACIT. a. Analyzes each component to determine whether it will be useful in his or her program. b. Analyzes each component to determine whether the procedures will be practical to use in his or her educational environment. c. Analyzes each competency as to estimated time, resource, and student requirements. d. Uses above analysis to further include or eliminate components and/or competencies.
Level 3 Mechanical Use	Assesses the FACIT system as it is used by him or her on the basis of the following: a. Time used to plan and collect materials required for each skill or knowledge being taught b. Student learning time c. Resources (material and human) needed d. Impact on students (1) Efficiency in classroom management (2) Efficiency and effectiveness in program planning and delivery
Level 4a Routine Use	1. Assessed a total competency or group of similar skills as the competency or group is completed. a. Analyzes pretest and posttest information. b. Summarizes information on student behaviors and comments during work periods. c. Decides whether the time needed to maintain recommended records is worthwhile. 2. Evaluates the new teacher role as classroom manager. a. Determines whether students accept this new teacher role. b. Determines whether the teacher feels comfortable with this new role.

Level of Use	Assessing--Continued
Level 4b System Refinement	Evaluates FACIT as to efficiency and effectiveness in order to improve its impact on students. Uses student performance records and their comments to determine ways to improve use of FACIT.
Level 5 Integration	1. Determines how a new, more effective curriculum can be devised using a combination of FACIT and new alternatives. 2. Compares personal use of FACIT in the classroom with that of other teachers. 3. Examines any procedures that appear to be more efficient than his or her own. 4. Decides to integrate any procedures that are more efficient or effective than his or her own.
Level 6 Renewal	1. Examines and evaluates any new CBE-implementation efforts about which information is available. 2. Decides whether these procedures are likely to prove more or less effective than those already in use in his or her classroom. 3. Decides to adopt any procedures that prove more effective than those already in use in the classroom.

Level of Use	Planning Category
Level 0 Nonuse	Makes no specific plans to obtain information about or to use FACIT.
Level 1 Orientation	Plans to acquire written materials explaining FACIT or to attend a FACIT-orientation session in order to decide whether or not to try using FACIT.
Level 2 Preparation	1. Decides which FACIT competencies are most relevant to his or her immediate needs. 2. Determines whether the instructional materials and other resources necessary for beginning FACIT use are available.
Level 3 Mechanical Use	Plans to incorporate FACIT concepts and/or procedures into his or her curriculum. a. Develops student learning plans centering around FACIT concepts and procedures. b. Makes arrangements to obtain necessary instructional materials and supplies. c. Plans with other teachers to share resources and materials when possible.
Level 4a Routine Use	Collects materials and information needed to implement the FACIT approach for the entire curriculum.
Level 4b System Refinement	Plans changes in management and/or logistical aspects of FACIT implementation in order to more effectively meet student needs. a. Makes any necessary substitutions in materials or resources. b. Plans alternative learning experiences for students. c. Changes FACIT procedures that prove impractical.
Level 5 Integration	1. Plans to refine curriculum by combining most effective FACIT procedures with most effective procedures formerly used. 2. Plans to review the curricula of other instructors who are implementing FACIT. 3. Plans to incorporate any concepts or procedures (obtained from other instructors) that prove more efficient and effective than his or her own. 4. Plans to work with other teachers in sharing areas of expertise, in team teaching, in presenting demonstrations, and in obtaining resources.

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Level of Use	Planning--Continued
Level 6 Renewal	1. Plans to review other CBE-implementation efforts. 2. Plans to incorporate any of these new procedures into his or her curriculum and to supplement and/or replace any old or FACIT procedures that have proven inadequate.

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Level of Use	Status Reporting Category
Level 0 Nonuse	1. Reports that (s)he has no knowledge of FACIT. 2. Reports little or no personal involvement with FACIT.
Level 1 Orientation	1. Reports that (s)he has attended a FACIT-awareness session. 2. Reports that (s)he believes at least part of the FACIT materials will be useful to him or her. 3. Reports that (s)he has decided which components will be most relevant to his or her needs. 4. Reports that (s)he has attended an in-depth workshop dealing with one or more of his or her chosen components. 5. Reports that (s)he is working through the materials. 6. Reports that (s)he has been able to master all of the posttests in his or her chosen components. 7. Reports that (s)he is planning to incorporate FACIT procedures into his or her curriculum.
Level 2 Preparation	1. Reports on how (s)he is planning to use FACIT procedures in the classroom. 2. Reports on efforts undertaken toward implementing each component.
Level 3 Mechanical Use	1. Reports on how well FACIT procedures are working and being received by students. 2. Reports on how helpful the guidelines given in FACIT were in the management of the classroom.
Level 4a Routine Use	Reports few, if any, problems in implementing FACIT.
Level 4b System Refinement	Reports that FACIT procedures are being adapted so that they will work more efficiently and effectively.
Level 5 Integration	1. Reports that (s)he intends to adopt any procedures that in other classrooms have proven more efficient than some FACIT procedures. 2. Reports that (s)he is involved in a team-teaching or sharing effort to produce a more effective curriculum. 3. Reports that (s)he is examining other CBE-implementation efforts to determine whether they will complement FACIT.
Level 6 Renewal	1. Reports that certain elements of the above-mentioned efforts have been integrated into his or her curriculum to supplement or replace any ineffective FACIT procedures. 2. Is considering major changes in the use of FACIT procedures.

Level of Use	Performing Category
Level 0 Nonuse	1. Is not using FACIT or any of its components. 2. Is not consciously using any CBE techniques. 3. Does not actively search for CBE materials. 4. Takes no discernable action toward learning about FACIT.
Level 1 Orientation	1. Gathers information about CBE and FACIT. a. Reads vocational journal articles relating to CBE and FACIT. b. Attends in-service workshops dealing with CBE and FACIT. c. Talks with other teachers and with administrators about CBE- and FACIT-related concerns. 2. Attends FACIT-awareness workshop. a. Learns about CBE concepts and techniques. b. Learns about FACIT and its components. c. Learns about the procedures involved in working through FACIT.
Level 2 Preparation	1. Inspects the FACIT system and decides which components are not relevant for him or her. 2. Obtains necessary FACIT materials. 3. Works through chosen FACIT components, takes pretests and posttests, and performs suggested activities. 4. Makes specific plans for how the implementation of CBE will proceed in his or her classroom.
Level 3 Mechanical Use	1. Begins to implement competency-based education in his or her program, using procedures and techniques suggested through FACIT. a. Develops or revises objectives. b. Develops or revises student learning activities. c. Develops, revises, or obtains criterion-referenced tests. d. Develops a classroom management system to meet the requirements of competency-based, individualized instruction. e. Plans how (s)he will evaluate instruction. 2. Revises procedures as problems occur.

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Level of Use	Performing--Continued
Level 4a Routine Use	1. Uses all components suggested through FACIT. a. Sets short- and long-term goals with students. b. Selects and sequences objectives for individual students. c. Uses criterion-referenced tests. d. Provides individualized learning experiences. e. Evaluates instruction. 2. Continues development of instruction to provide students with a variety of learning experiences. 3. Manages classroom and instruction efficiently according to FACIT-suggested procedures.
Level 4b System Refinement	1. Revises learning experiences based on evaluative input. 2. Incorporates into the FACIT system successful classroom techniques used previously. 3. Incorporates into the FACIT system innovative techniques and curriculum materials. 4. Alters FACIT techniques to make them more suited to his or her particular classroom situation.
Level 5 Integration	1. Plans with other teachers an articulation of techniques and learning experiences used in the various classrooms. 2. Adapts his or her own curriculum to provide for better articulation between programs. 3. Adopts techniques and procedures used by other teachers to make his or her classroom procedures more effective and efficient.
Level 6 Renewal	1. Investigates other CBE approaches. 2. Selects other CBE approaches to use in addition to or instead of FACIT approaches. 3. Revises the classroom procedures, using more innovative and effective systems.

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